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EDITED BY

H. A. HARE, M.D.

Professor of Therapeutics and Diagnosis in the Jefferson Medical College

GENERAL THERAPEUTICS

AND

EDWARD MARTIN, M.D.

Formerly Professor of Surgery in the University of Pennsylvania

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Original Articles

Urethral Catheterization: Its Pitfalls and Their Avoidance

BY S. W. MOORHEAD, M.D.

Associate in Urology, University of Pennsylvania; Urologist to the Howard Hospital, Philadelphia

Catheterization, an operation rarely considered as of more than minor gravity, is often a procedure of the greatest importance to the patient, and therefore to the physician. It may be the means of giving men, tortured with overdistended bladders, instant relief, and of supplying others who can urinate only with a vast amount of straining an easy means of voiding. On the other hand, applied unskilfully, without due regard for asepsis and the nature of the patient's urinary difficulty, it may render the urethra impassable to the catheter, even in the hands of the most skilful, or it may cause periurethral inflammation, with or without suppuration, or, by sudden "decompression" of the bladder and kidneys, may bring about anuria and death.

Urethral fever, a term used to indicate a febrile state subsequent to urethral instrumentation, is less frequent now than formerly, but has not disappeared. The condition is due to infection. Keyes states that it is due to infection of the kidney, to pyelonephritis. It is in many cases, but not always, in my opinion. We know that it is more apt to follow rough, bruising manipulations, clean or dirty, than gentle instrumentation, clean or dirty, and it seems probable that trauma of the prostate plays a large rôle in its causation. This may operate either by forcing infectious matter out of this organ into the general circulation, or possibly by rendering the kidneys susceptible to infection through disturbance of their circulation brought about reflexly by the trauma.

Be that as it may, we know that gentleness goes far in reducing the incidence of this complication; which may be so mild as to be merely annoying, or so severe as to have lethal consequences. Gentleness, with asepsis, is our chief defense against urethral fever. Its observance presupposes a number of things, which may be classed under—

Proper instruments.

Proper lubrication.

Proper manipulation.

Instruments.—As it is impossible to do perfect work with defective tools, an adequate supply of good catheters is of prime importance. A perfect catheter has a flawless surface, a properly formed tip, and a smooth, depressed eye. Flexible instruments have the requisite degree of resilience; rigid catheters have a proper curve.

The most generally useful catheter is made of soft rubber (Fig. 1). The end should be ovoid rather than round. The shaft when pinched between thumb and finger should offer considerable resistance; the walls must be fairly thick and the rubber of good quality. Soft-rubber catheters will last for years if properly cared for

(cleaned after use, covered with talcum powder, and laid straight in boxes or drawers). Before use they should be tested as to tensile strength. (I have seen two cases wherein pieces of catheter were lost in the bladder.) The most useful sizes are 16 F. and 18 F.

Woven catheters are stiffer than the rubber instruments, and for this reason are sometimes easier to pass. Catheters of this kind should never be straight; they should always be made with 30-degree angles about a centimeter from their tips, which may be either cylindrical or (Fig. 1) olivary. The angles, designed primarily to enable the catheters to pass over bars at the bladder orifice, are also useful in following the sharp curve of the urethra at the bulbo-membranous juncture. Like the soft-rubber instruments, woven catheters should be well made. The added expense of the best French instruments is more than balanced by their greater durability. Their care is that described for soft-rubber catheters. The most useful sizes are 12 F., 14 F., and 16 F.

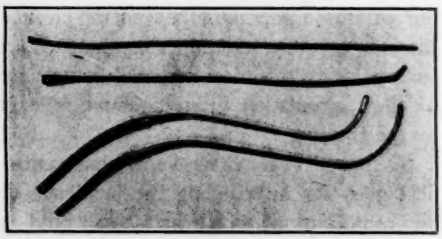

FIG. 1.—Basic types of catheters. From above downward: Soft rubber catheter; woven catheter with elbowed olivary tip; metal catheter with normal urethral curve; metal catheter with "prostatic" curve.

Metal catheters, usually made of nickeled brass, are of two types (Fig. 1), according to whether they are intended for use in patients with normal posterior urethras or in those with marked prostatic enlargement. The former's curve is an arc of a circle 3¼ inches in diameter, while in the case of the latter the curve is that of a circle with a diameter of approximately 4½ inches. The most generally useful size is 16 F.

The catheters described above form the foundation of a physician's armamentarium, whether he be in general work or specially interested in urology. If likely to be called upon to give relief to cases of severe stricture certain other instruments should be added. These are a dozen whalebone filiform bougies, one or two Gouley tunneled catheters, say 10 F. and 12 F., and a Philips catheter, 12 F. Gouley catheters are of the well-known model with an eye in the tip to be passed over a filiform which has been introduced through a stricture. A Philips catheter is made to screw into a "whip" filiform bougie, which is then pushed through the urethra into the bladder ahead of the catheter. Its use is attended with less trauma and risk than is that of the ordinary whalebone filiform and Gouley follower.

The following list contains the necessary catheters, together with the desirable additions just mentioned:

Soft rubber, Nos. 16 F. and 18 F.

Woven, with elbowed olivary tips, Nos. 12 F., 14 F., and 16 F.

Metal, normal curve, No. 16 F.

Metal, prostatic curve, No. 16 F.

Twelve filiform bougies, whalebone.

Gouley tunneled catheters, Nos. 10 F. and 12 F.

Philips catheter, with two whip filiform bougies, No. 12 F.

Lubrication.—The lubricant must be slippery, non-irritating, and sterile. Secondary considerations are that it should be non-injurious to instruments and easily removable from the instruments and the patient's genitalia.

These requisites are best fulfilled by a water-soluble jelly, of which there are a number on the market, conveniently dispensed in collapsible tubes. Should the surgeon wish to make his own lubricant, an excellent preparation is produced by dissolving powdered gum tragacanth in 1 or 2 per cent phenol solution.

Sterilization.—The most efficient method of sterilizating instruments is by boiling. Everything described above except the whalebone filiform bougies may be so sterilized without injury, provided no soda is used in the water; woven instruments are ruined by boiling in soda solution. If de-

sired, sterilization can be effected by soaking in a chemical germicide, such as formaldehyde, 5 per cent, or mercurophen, 1:2000, for two minutes or more. Thereafter instruments must be carefully washed in sterile water to remove the disinfecting agent. Phenol and cresol preparations destroy the surface of woven instruments.

FIG. 2.—Catheterization by the "forceps technic."

Manipulation.—In using a catheter one must observe such precautions as will prevent the sterilized instrument from becoming contaminated. We recognize three sources of infection—the patient himself, our instruments, and our hands, the last being the most important. The first source, the patient, is guarded against by wiping off his meatus with alcohol or other germicide, and having him void, if this be possible; if he be unable to void a small syringe should be used to flush out his anterior urethra with boric or permanganate solution, sterile water, etc., mechanical cleansing being the end sought. At the conclusion of the operation, particularly if trouble has been experienced in entering the bladder, the injection of mercurochrome-220, one-half to one ounce of a one-per-cent solution, will sometimes avert a threatening urethral fever.

The actual introduction of the catheter must be accomplished without allowing it to touch a non-sterile surface. It is not convenient to scrub the hands and put on sterile gloves for this manipulation—there are too many other things for which it is necessary to use the hands. Handling the catheter by means of some sterile material or instrument is a more satisfactory plan. My own preference is for a pair of sterile forceps, used in the manner shown in the illustration (Fig. 2). Instead of the forceps a sterile towel, piece of gauze or pledget of wet cotton may be used if desired. In the case of rigid instruments it is a simple matter to touch only that portion which will remain outside the urethra, and whose contamination is therefore of no consequence.

Flexible instruments are best passed from the patient's right side, rigid catheters from his left. In the case of the former the catheter must be depended upon largely to find its own way. Usually it does this without difficulty, slipping along smoothly with only slight hesitancy at the membranous urethra, where it passes through the compressor urethræ muscle. Pulling the penis strongly upward is helpful; occasionally a finger in the rectum is able to direct the tip of the catheter upward when it tends to bury itself in the posterior wall of the bulb rather than make the curve into the posterior urethra.

When a moderate amount of pressure and

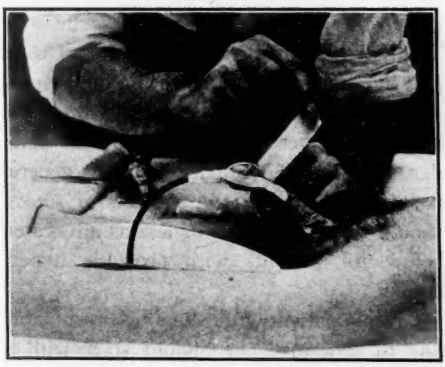

FIG. 3.—Method of securing an in-lying catheter. With the prepuce retracted, three or four strips of adhesive plaster are passed from the penis down to and about the catheter. Finally an adhesive strip one inch wide is wrapped about the penis behind the glans.

manipulation fails to make a soft-rubber catheter pass into the bladder a woven instrument should be tried, the same manipulations being followed. This failing, recourse may be had to a smaller size (*e. g.*,

12 F.); or a metal instrument may be used, not in order to make greater pressure, but in order to gain better control and to better direct the tip. In passing a metal instrument the urethra must be visualized and followed as though actually in view, the same delicacy of touch being employed as used by an artist working with a camel's-hair brush. It is useful to remember that the catheter should pass directly toward the floor till it reaches the bulbomembranous juncture, and should then turn almost at a right angle to pass under the pubis into the bladder.

What has been said applies in the main to catheterization of the approximately normal urethra. Such catheterization becomes necessary at times; after surgical operations, especially on the rectum; in unconscious patients; and in the intoxicated. In urological examinations it is, of course, a frequent procedure.

Mechanical retention of urine is usually due to either stricture or so-called prostatic hypertrophy. As the handling of the two conditions is quite different it will be described in some detail for each.

Given a patient under fifty with retention of urine we are warranted in proceeding under the assumption that he is suffering from stricture, that the retention is of comparatively short duration, and, in the absence of conspicuously poor general condition, that it is proper to at once empty his bladder. Strictured patients in bad general condition, obviously the subjects of sepsis, should be treated more or less as advocated below for patients with prostatic hypertrophy.

Given a patient with retention presumably due to stricture, one should start with a catheter of fair size, say 18 F. Occasionally congestion or spasm is the cause of the retention, and it is a matter of common observation that an instrument which comfortably fills the canal can be passed with more ease than one which is much smaller, and therefore likely to catch on irregularities of the urethral wall.

An 18 F. soft-rubber catheter having failed to pass recourse is had successively to 16 F. soft rubber; 16 F. woven; 16 F. metal, normal urethral curve; 14 F. woven; 12 F. woven; filiform bougies.

The method with filiforms is to try to pass one of the little instruments, working it up and down, feeling for the urethral lumen. If this cannot be found the filiform should be bent near its tip, so that as it is rotated and worked up and down different points on the face of the stricture will be explored. This failing, a number of filiforms are introduced one at a time, and these are repeatedly tried one by one, till finally one is felt to enter the stricture and pass through into the bladder. This accomplished the patient will be able to void around the instrument, not freely, but sufficiently well to relieve the pressure in his bladder. One may either stop at this point or pass a Gouley catheter over the filiform. If this be done much care must be used not to cut the delicate whalebone with the follower. A safe plan is never to advance the catheter unless a gentle pull on the filiform causes it to slide through the eye of the metal instrument.

Prostatic Obstruction.—With two exceptions patients with prostatic hypertrophy are catheterized in the way already described. The exceptions are that when soft-rubber and woven instruments fail to reach the bladder a metal catheter with prostatic curve should be used rather than one with a normal curve, and that filiform bougies and followers are never employed.

Two other points are of great importance: (1) absolute adherence to an aseptic technique is even more essential than in patients with acute obstruction, who under ordinary circumstances can completely empty their bladders; and (2) it is unsafe to at once completely empty the bladder of this type of patient.

Patients with obstructive prostatic disease have a residual urine of from a few drachms to several pints. For this reason they always have a certain amount of back

pressure on their kidneys. Now while it is essential for the health of their kidneys that this back pressure be removed, it is also essential that it be removed gradually; for we have found by experience that sudden removal ("decompression") is productive of very serious results. There is always a marked fall in blood-pressure; there is a decrease in the functional power of the kidneys (sometimes to the point of anuria); occasionally there is hemorrhage (*e. g.*, from the kidneys). It follows, therefore, that emptying a chronically distended bladder of urine in his bladder (gradual "decompression"). The method requires confinement to bed, an objection more than balanced by the added safety. A patient coming to the office for relief may properly be catheterized and have eight to ten ounces of urine removed; he should then be sent to his home or a hospital for the installation of the apparatus described.

Patients Who Cannot Be Catheterized.—What can be done for patients on whom no instrument can be passed? A hospital is the proper place for such cases, and operative exposure of the urethra or bladder is the proper treatment. There is another simpler procedure which may be used as an emergency measure when the difficulty or risk of transportation to a hospital warrants the hazard. This is suprapubic puncture; the passage of a large needle through the abdominal wall immediately above the pubis, and thus into the bladder. This operation has been done successfully thousands of times. But in doing it one must remember that even on extreme distention of the bladder the peritoneum may still extend down to the pubis, and that after such a puncture leakage of urine may occur. In a recent report by Bailey and Huddy (*Brit. Jour. of Surg.*, 1924, xii, 183) of 107 cases

FIG. 4.—Van Zwolinburg's decompression apparatus, modified by the substitution of a "Y" for a "U" tube at the mouth of the bottle, to eliminate siphonage.

may result in grave damage to the patient, even in his death.

Recently a number of methods of handling the condition have been proposed; the original one, that of Van Zwolinburg, is the simplest and one of the most efficient. It consists in installing an inlying catheter (Fig. 3), which is connected by means of rubber tubing with a bottle or can above the level of the patient's bladder (Fig. 4). The height of the receptacle is such that a few drops of urine pass into it when the patient takes a deep breath. The bladder therefore works against a constant hydrostatic pressure which is decreased gradually, during a period of a number of days, as the patient becomes accustomed to the lessened amount

of extravasation of urine, 7 occurred after suprapubic puncture; the mortality among these seven cases was 57 per cent.

SUMMARY.

Catheterization is an operation of sufficient importance to be performed with the greatest care. To avoid complications gentleness is of the utmost importance; it can be attained only when the physician is equipped with proper instruments. An aseptic technique is essential; in difficult cases it may be supplemented by the injection of a germicide, as mercurochrome-220, at the conclusion of the operation. Special care is needful in the management of cases with residual urine.

1523 PINE STREET, PHILADELPHIA.

Some Common Complications of Submucous Resection of the Nasal Septum and How to Guard Against Them

BY C. CALVIN FOX, M.D.

Clinical Assistant in the Otological Department of the Jefferson Medical College Hospital, Philadelphia

Submucous resection of the nasal septum, as now performed, was originated almost simultaneously by Ingals and Kieg about thirty years ago, with more recent modifications by Yankauer, Ballinger, Killian, Freer, and others.

The operation is most frequently performed, first, because of obstruction to breathing, drainage or ventilation in one or both sides of the nose; secondly, because of septal deviations that cause pressure symptoms of headache or troublesome reflex nervous symptoms; thirdly, because of nasal deformities, such as irregularity of the external nares, or thickening of the bridge due to hyperplasia of the septal cartilage. Occasionally the operation is done to eliminate intermittent epistaxis. Rhinoplastic cases are sometimes preceded by submucous resection of the septum.

The operation enjoys freedom from complications in all but a very small percentage of cases. This present status of the operation should not lead us to fail to consider the fact that very serious complications may and do follow this usually safe operation. It is true that the methods of procedure are at present far superior to those employed several years ago. The structures involved in the operation are in close relation to areas very sensitive to infection.

Complications may begin even before an incision is made. Some few individuals have a marked idiosyncrasy to cocaine. They become faint or even unconscious soon after a small amount is applied to the nose. Death has at times followed its use in susceptible patients.

At present the operation is often performed under a general anesthetic because of the preference of some patients plus the ease and thoroughness of the operation with the patient fully controlled. When a general anesthetic is used its ordinary complications are to be considered.

A high percentage of patients are very nervous and excited at the time of operation. This class of case should be given more consideration than is sometimes granted them. It is not unusual for these people to have systemic irregularities that are aggravated and converted into a risk by extreme nervousness, fear, or shock. The patient having a known, or more often an undiscovered, heart, lung, kidney or glandular condition may develop alarming symptoms during or after the operation.

A case recently came to my notice in which the patient was very fearful of having an operation done with local anesthetic. She fainted during the operation and was in poor condition when returned to bed. She

did not seem to rally and died only a few hours later with shock probably playing a sinister rôle.

An incision just posterior to the mucocutaneous junction in the nose or horizontally along the apex of a ridge near the floor of the nose would rarely, if ever, be subject to immediate danger, but the subsequent steps of mucoperichondrium elevation, or removal of the deflected cartilage and bone, are the points where care is most needed.

Hemorrhage is a negligible factor except where a history of a blood dyscrasia is obtained.

The more serious complications appear some little time after operation. The most fatal sequel is meningitis of various types. Dabney[1] reports nine cases of meningitis following submucous resection of the nasal septum.

It is quite possible when elevating the mucoperichondrial flaps covering a high septal deviation to allow the dissection to be carried too far superior until it lays bare the cribriform plate of the ethmoid bone. It is also possible to carry an elevator into or through the cribriform plate, since the plate is sometimes very thin. Chiari reports having dissected two cases which showed an actual deficiency of the cribriform plate. In either event infection can readily be planted by the instruments between the flaps, upon the cribriform plate, or directly through the plate into the meninges.

The infecting organism is in the majority of cases carried into the cranial cavity along the course of the nerves, blood-vessels, or lymphatics. The small veins perhaps most readily admit the organisms and carry them directly to the meninges and base of the brain. The organisms may be any that inhabit the nasal mucous membrane, but the pneumococcus and streptococcus are most frequently found in the spinal fluid.

One case of interest was that of a young adult operated for the removal of an obstructing septal ridge, low on the left side of the septum, with apparently little trauma and good result. Prior to operation the nose contained no purulent material, *x*-ray of the sinuses showed no definite infection, and the patient's general condition was good. Twelve hours after operation the packing was removed. Eight hours later the patient complained of frontal headache that rapidly became general in character. He became restless and soon quite delirious. Two hours later, or twenty-two hours after operation, a spinal puncture revealed the spinal fluid to be slightly clouded. No organisms could be found in the fluid, although there was an abundance of leucocytes. The symptoms of meningitis became rapidly typical. The spinal fluid was drained every eight hours. Antistreptococcic serum was given twice intraspinally, and at subsequent alternate tappings Huntoon's antipneumococcic serum was given intraspinally. The serum was also given subcutaneously. The patient showed practically no definite response to treatment and died the fifth day after operation. The spinal fluid did not show the infecting organism until the final puncture preceding death, in which fluid a few pneumococci were discovered.

The cases of meningitis of traumatic origin are usually due to fracture of the cribriform plate following forceful evulsion of the vertical plate of the ethmoid bone. These cases rarely escape fatal meningitis, although I observed an interesting case that had a submucous resection done and continued to have a dripping of fluid from the nose after operation. The fluid was at first discolored by blood, but in several hours became clear. The patient entered the dispensary complaining only of the constant escape of fluid from the nose, which flow was greater when the head was inclined anteriorly. He was put into bed and *x*-ray confirmed a fracture of the cribriform plate. The fluid was found to be normal spinal fluid. The patient was kept in a semiprone position while the flow of fluid gradually diminished and stopped. The patient recovered completely.

Beck[1] reports a similar cerebrospinal rhinorrhea following an automobile accident.

[1]Dabney: *Archives of Otolaryngology*, July, 1925.

[1]Beck: *Archives of Otolaryngology*, July, 1925.

Pollock[2] had a case in which cerebrospinal fluid came from the nose after a patient had been dancing to excess. No pathologic cause could be found in his case.

Septal abscess is not an unusual occurrence and has been reported as developing septicemia, meningitis, and death.

Secondary complications are those developing in structures removed from the immediate field of operation. Those most common are pharyngitis and tonsillitis. These are due to the irritating effect of the postnasal drainage, and possibly an alteration or stasis of the venous or lymphatic circulation in the nasopharynx. More serious is the appearance of an otitis media induced by an inflamed condition of the pharyngeal end of the Eustachian tube. One case which failed to report, as directed, for postoperative treatment journeyed to another city, where several days later he developed an acute suppurative otitis media of the right ear. The drum was incised, but acute mastoiditis rapidly developed. The patient was returned to me in a very critical condition for immedate mastoidectomy, following which he made an uneventful recovery.

Consideration of the foregoing difficulties leads to the question of how they may be eliminated or reduced to a minimum. In all cases it is important to have a history with examinations, inquiring into the possibility of diabetes, syphilis, tuberculosis, nephritis, blood dyscrasias, and the stability of the nerve and ductless gland systems. An excellent practice is to have the patient instil into the nose once or twice daily, for a few days preceding operation, several drops of an antiseptic solution such as argyol or neosilvol. At the time of operation the use of cocaine would be made a more safe procedure if it were preceded by an application of adrenalin to constrict the vessels, thus limiting to a minimum the absorption of cocaine, even when the cocaine solution to be used contains a small amount of adrenalin for hemostatic purposes.

Before an incision is made into the nose the skin area contingent to the field of operation should be cleansed with alcohol. In case a general anesthetic is used the face can be almost completely covered by a piece of sterile gauze across the upper face and eyes, draped so as to meet laterally with sterile gauze used over the mouth. In this way all skin is covered except that of the tip of the nose itself. Such simple preparation enables the operator to keep the instruments more sterile and prevents the sponges from coming into contact with non-sterile skin before being placed between the flaps to sponge away the blood. The mucous membrane should not be elevated more extensively than is actually necessary to expose the deflected portions of the septum, and only enough bone removed to relieve the difficulty. It is most important to exercise great care when fracturing pieces of deflected bone high in the nose. Too sudden and too violent force applied to the ethmoid or vomer with heavy forceps should be strictly guarded against, for it is in this way that many reported cases of meningitis, due to fracture of the cribriform, have been produced. Before closing the flaps a good practice is to inspect the operative field for loose fragments of bone and small blood clots. There is undoubtedly a tendency to pack the nose more tightly than is necessary. Such packing produces a stasis and congestion of the parts, which increases the tendency for venous oozing and in turn leaves the tissue poorly nourished. It also prevents the escape of infectious drainage from the nose or sinuses, thus predisposing to aggravated or new sinus infections. The packing should not be allowed to remain in the nose more than twelve to twenty-four hours, since it is an unnecessary discomfort, causes circulatory stasis, prevents good drainage, and adds to the danger of infection.

The postoperative care is of great importance, if we are to obtain uniformly good results. In a few hours after removal of the packs, much of the blood clot can be removed with warm saline solution, gently applied. Daily treatments with saline and oil solutions will bring about more rapid healing, keep down infection by removing foul secretions, and prevent the formation

[2]Pollock: *Archives of Otolaryngology*, July, 1925.

of adhesions. The patient himself can aid by instilling oil and antiseptics several times daily.

SUMMARY.

Submucous resection of the nasal septum may be attended by serious and fatal consequences which should be borne in mind by the operator. The use of either local or general anesthetics may be followed by serious sequences in patients with idiosyncrasies, nervousness, and systemic lesions. The danger from hemorrhage is remote except in blood dyscrasias. The cribriform plate may be exposed or perforated by high dissections, and infection carried by the lymphatics or venous capillaries to the meninges, pneumococcic meningitis being the most frequent result. Too forceful removal of cartilage or bone may fracture the cribriform plate, which is followed by cerebrospinal rhinorrhea and meningitis. Septal abscess is not uncommon and unless promptly and properly treated may cause death. Secondary complications of pharyngitis, tonsillitis, and ear conditions are due to irritating drainage or alteration of the lymphatic and vascular circulations.

To minimize complications a history and physical examination should be had in order to discover systemic irregularities and susceptibilities. The field of operation can be made more free from infection by using antiseptics in the nose for several days before operation. Careful selection and application of anesthetics should be made. The areas contingent to the nose can be made sterile to avoid contamination of instruments and sponges. The mucous membranes should not be elevated more extensively than is necessary, care being taken to avoid the cribriform plate. The fracturing of cartilage and bone must be done as carefully and gently as possible. Too tight and too protracted packing is to be avoided. Proper postoperative care is essential if the results are to be uniformly satisfactory.

Studies in Sterility—The Rubin Test

BY THOMAS R. MORGAN, M.D.

Assistant Demonstrator of Gynecology in the Jefferson Medical College Hospital
With a preliminary note by
BROOKE M. ANSPACH, M.D., Professor of Gynecology

In the light of modern gynecology, no study of the sterile patient is complete without a determination of the patency of the Fallopian tubes. This is true even though an apparent reason for the failure to conceive has been shown by the ordinary physical examination. Without such investigation, divulsion of the cervix, curettement, the introduction of a cervical stem, round ligament suspension and other operative procedures, designed to remove a suspected or an obvious lesion, have been undertaken in countless instances without the desired result. The tubes must be open for the passage of the spermatic particles upward and of the ovum downward. If they are closed the correction of any other abnormalities of form and position, new growths, etc., will of course be without avail. Before the Rubin test, the patency of the tubes was a matter of conjecture: if disease was evident, they might reasonably be supposed to be occluded; if no enlargement, fixation, tenderness, etc., could be determined by palpating, nothing but an exploratory section would shed light on the question. In the following article, Dr. Thomas R. Morgan, who has made a study of these tests in the Gynecological Department of the Jefferson Hospital, describes his technique and gives the results of his investigation.

The Rubin method requires essentially (1) a means of introducing gas under pressure into the uterus, and (2) a means of determining whether that gas has passed

through the Fallopian tubes into the abdominal cavity. As to the apparatus used, it consists of (1) a Keyes-Ultzmann urethral cannula (with perforations at the end) threaded through the rubber tip of a male anterior urethral syringe which fits into the cervix and closes the cervical canal. It is through this apparatus that the gas is introduced in the uterus.[1]

The source of gas supply is a tank of carbon dioxide, in whose output-tube is placed a reducing valve for the purpose of regulating the pressure of the flow and a simple valve controlling the rate of the flow. The latter is connected to the intake of a 40-cc siphon flow gas measuring meter inverted in a one-liter jar, which contains water and is sealed except for its outlet. One arm of this leads through a small release valve to the uterine cannula, the other arm to a mercury manometer which measures intra-uterine pressure.

At first sight the apparatus seems needlessly complicated when one reflects that the source of gas under pressure might be air from a bulb syringe, and its pressure measurement a Tycos manometer. Accuracy however demands: a constant low gas pressure; a flow so regulated that sufficient gas to produce a pressure of 100 mm. accumulates in about 20 seconds; a measurable quantity of gas because not more than 80-100 cc is necessary to elicit the pneumoperitoneal pain reflex, and large quantities cause excessive pain.

The matter of gas selection is also of some importance since the introduction of 100 cc of air into the abdominal cavity causes marked pain due to its nitrogen content. Oxygen also causes rather severe pain which is apt to be prolonged because the gas is slowly absorbed. Carbon dioxide produces less pain than either of the others and is rapidly absorbed; it is therefore the one to be preferred.

Interpretation of Results.—Having introduced gas into the uterus, how are we to know whether that gas has passed through the tubes into the peritoneal cavity?

We believe that a sustained manometer reading of 200-220 mm. (and this is the highest safe pressure) indicates that the gas is held within the uterus and therefore that the tubes are occluded.

Since it has been shown that the resistance of normally patulous tubes is not over 40-80 mm. (Peterson) or at the most 100 mm. (Aldridge), a sustained manometer reading which does not rise above 100 mm. with a continuous flow of gas indicates that gas is passing into the peritoneal cavity.

It was formerly our custom to fluoroscope patients in the upright position for evidences of gas in the upper abdomen; it was found, however, that when gas was present the patients complained of pain in the upper abdomen, and one or both shoulders, particularly the right. This pneumoperitoneal pain reflex appears to be so characteristic that the patient is now simply raised into a position to produce it, and fluoroscopy has been discarded.

Manometer readings of 100-200 mm., signs of pneumoperitoneum being present, have been taken to indicate a more or less marked degree of tubal obstruction. Practically all the cases in this group subjected to operation exhibited definite tubal pathology of some sort which interfered with the normal patulence of the tubes.

In absolute occlusion, definite midlower abdominal pain has been observed and ascribed to uterine distention; in the case of unilateral occlusion pain is noted on the side of the occlusion, while auscultation often reveals gas passing from the patulous tube on the other side.

Contraindications.—(*a*) Acute pelvic or intra-abdominal inflammations, accompanied by elevation of temperature, pulse, and leucocytosis.

(*b*) Inflammatory reaction following bimanual pelvic examination.

(*c*) Pregnancy, either intra- or extrauterine.

(*d*) Uterine bleeding from any cause whatever; otherwise blood may be forced into the abdominal cavity.

(*e*) Purulent endocervical discharge.

(*f*) Large abdominal tumors, although we have used pneumoperitoneum as an aid

[1] With strict aseptic technique.

to *x*-ray in the diagnosis of splenic, renal and retroperitoneal tumors.

(*g*) Serious organic heart disease.

Unfavorable Results.—(*a*) Shock. This occurred in one thin, asthenic woman who had an advanced myocarditis.

(*b*) Air embolism. Selheim cites a single case.

(*c*) Pneumosalpinx. Two cases have occurred: in one the abdomen was opened at once and the tube removed; the other subsided under observation. Such an accident is quite unlikely to occur except in hydrosalpinx, which empties its contents periodically into the uterus (hydrops tubæ profluens); this was the condition of the tube in the patient operated on. There was no palpable enlargement of this tube preceding insufflation.

(*d*) Inflammatory reaction is always a possibility in the inflammatory case, but with careful avoidance of acute or subacute conditions, as noted above, there has been none of any consequence in our series.

(*e*) Interruption of uterine gestation. This is not inevitable when the Rubin test is done in the early months; cases have been reported (pregnancy not being suspected) that have gone on to term.

(*f*) Interruption of tubal gestation. One case has been reported by Dr. John Cooke Hirst of tubal rupture five days after a Rubin test.

(*g*) Tubal rupture. Certainly not a danger to be feared with pressures under 200 mm.

(*h*) Pain. Most marked in inflammatory cases but never severe; shoulder pains can readily be controlled by lowering the head of the table for fifteen to twenty minutes, this being about the time required for the absorption of the carbon dioxide gas. In no case has it been necessary to administer any medication for the relief of pain.

(*i*) Changes in menstrual cycle. None were noted. In this connection we believe that a Rubin test immediately prior to the menstrual period is liable to lead to erroneous findings of tubal occlusion, because of the endometrial hypertrophy. Probably the most favorable time is about the fourth or fifth day (Rubin) immediately following the period; since then the endometrium is shrunken and offers no impediment.

Difficulties Encountered.—In two cases of acute anteflexion and one of unicornuate uterus, it was impossible to introduce the cannula. Nervous patients are at times hard to control, but they can usually be reassured when told that they will have but a little pain and no severe discomfort.

The irregular cervix is difficult to render air-tight, but usually by applying the tenaculum to the side of the cervix and inclining the cannula one way or the other a point is found at which an interpretable uterine pressure is possible. It is in these cases that the presence or absence of the shoulder-pain reflex is of diagnostic value.

Value of the Test.—The Rubin test is of value in determining whether the tubes are normally patulous or partially or completely obstructed. It may be used not only in the search for the cause of sterility in a given case, but also to demonstrate whether an attempt to sterilize the woman by excision of the tubes or by an intrauterine cauterization of the interstitial part has been successful. Preceding operations for myoma, a knowledge that the tubes functionate normally may be an additional indication for myomectomy rather than hysteromyomectomy when pregnancy is desired. Not only in operations for myoma, but also in pelvic inflammatory diseases, the test shows when conservative surgery offers a favorable outlook so far as conception is concerned. The test may be of considerable value in diagnosing obscure cases of pelvic disorder when inflammatory lesions of the tubes are suspected, but cannot be palpated; and this is true quite independent of the question of sterility, for it may aid in the differential diagnosis of obscure lower abdominal pain. Transuterine insufflation of carbon dioxide gas followed by *x*-ray pictures helps in the diagnosis of pelvic and abdominal masses, and cases of tuberculous peritonitis have been treated by the insufflation of oxygen. Transuterine insufflation has been used for the purpose of maintaining tubal patency following conservative procedures on the tubes, and it appears that in some instances the opening up of the tubal lumen which

occurs during the Rubin test has promoted the occurrence of conception which followed soon after.

STATISTICS.

Some 354 cases have been examined in the gynecological service of the Jefferson Medical College Hospital. An analysis of insufflation in these cases shows:

Tubes patent 96, or 27.1 per cent.

Tubes partially occluded 108, or 30.5 per cent.

Tubes occluded 150, or 42.3 per cent.

A total of 204, or 57.6 per cent, must therefore be regarded as "Rubin positive"—that is, gas passed through the tubes into the abdomen.

Eight cases have reported pregnancies following the test; of these two had been regarded as patulous, five as partially occluded, and one as absolutely occluded. The duration of sterility in these cases had varied from three to sixteen years.

We believe that relief of sterility in these cases was due to insufflation alone.

A total of 57 cases went to operation, in 56 of which laparotomy was done. Of these, three had normal tubes which proved so on inspection. The remainder, 53 cases, diagnosed as occluded or partially so, showed gross tubal pathology on inspection with one exception. This patient had a backward displacement, there was no evidence of pelvic inflammation, and the tubes were proved patulous by Curtis's method.

Another case, regarded as occluded, had had a previous salpingectomy. Under anesthesia a backward displacement but no other pathology was noted. D. & C. was done, and the patient became pregnant within three months. Undoubtedly endometrial hypertrophy or the backward displacement was responsible for the erroneous Rubin findings in these two cases.

It is now our custom, in cases in which an uncomplicated displacement shows Rubin evidences of partial or complete occlusion, to replace the uterus where possible and reexamine. Fourteen of sixteen cases so treated have proven patulous on reëxamination.

In view of these experiences it is well to bear in mind the influence of the menstrual cycle and retrodisplacements upon the Rubin findings. Where a carefully taken history and a bimanual examination do not suggest inflammatory disease, and the Rubin test is "negative"—that is, no gas has passed into the peritoneal cavity—attention to the position of the uterus, or reëxamination during the five- to eight-day postmenstrual period, may be rewarded by a "positive" Rubin indicating patulous tubes.

Colitis

BY CHARLES J. DRUECK, M.D.

Professor of Rectal Diseases, Post-Graduate Hospital and Medical School, Chicago

The synonyms for this condition are mucous colic, mucomembranous colitis, catarrhal colitis, myxomembranous colitis, and myxorrhea.

Colitis is not an entity, although it may present the clinical appearance of being an independent disease, but is part of the manifestation of a functional or organic disturbance, or an infectious enteritis, and is commonly an accompaniment of organic obstructive disease of the colon and also of dysentery. The terms idiopathic and catarrhal colitis, implying that the disease arises spontaneously and not in consequence of some other morbid condition, are not acceptable because certain factors are always present.

Classification of types of colitis is meaningless because mucous colitis differs from membranous colitis only in degree, and if aggravated the condition goes on to ulceration or to a hemorrhagic stage. If increased peristalsis and diarrhea are complained of a mucous colitis appears, while during the constipated periods a membranous colitis is present.

The disease may occur at any period of life, from infancy to old age, and, contrary to the prevailing belief, is encountered in males quite as commonly as in females.

Though mucous colitis is of frequent occurrence, yet it appears to be infrequently recognized. The importance of its recognition is evident if we realize that, although at times the condition of the bowel may be merely incidental to more important lesions, it is most often associated with serious states of physical debility or of mental instability.

Many patients exhibit manifestations of abnormal endocrine functions, and the disturbance of one organ or gland is apt to demoralize the proper balance of the vegetative and anatomic systems. This type of disturbance is sometimes erroneously described as a secretory or motor neurosis of the large intestine when in reality it is a collection of symptoms resulting from various systemic disturbances. A very well-known analogy occurs in disturbed thyroid secretion when diarrhea is a constant symptom.

Mechanical obstruction also interferes with the secretory and nutritional functions of the bowel. Sometimes excessive indulgence in coffee, or alcoholic drinks, is the cause. Tobacco or spices may add their toxic factors, or in other instances a self-restricted diet deprives the body of its necessary quantity and variety of food.

There has been of late years a good deal of investigation directed toward demonstrating that focal infections, such as infected teeth and tonsils, an infected appendix or an infected gall-bladder, may cause colitis by producing septic infarcts of areas of the mucous membrane. Rosenow has particularly called our attention to this point.

Bacterial infection accounts for many colitis cases. It is however not always possible to determine which microörganism is the exciting agent because many strains are usually found, but we know that some bacteria are commonly associated with certain definite lesions.

The habits of defecation vary with each subject from the sluggish evacuation of large size produced only by the exhibition of cathartic drugs or an enema, and then accompanied by flatulency and colicky pains, to the other extreme where the individual has frequent soft, mushy or diarrheal movements or evacuations of enormous quantities of mucus. The attacks may come on so suddenly as to appear to be an acute disorder, but will usually be found to follow unusual nervous strain when the individual has overtaxed his physical or nervous strength. Sometimes this excessive expenditure is more or less continuous, as in school study, domestic worry, or business cares.

It is therefore important that we make repeated thorough examinations of the excretions and secretions in each and every case.

A careful study of the stools of these individuals usually shows that when the bacillus coli preponderates the colon is atonic with a flat, thin mucous membrane, having a dry surface. There is thinning of all of the coats of the bowel, and clinically intestinal toxemia is notable.

Where the anaerobic bacilli are found, saccharo-butyric fermentation is the rule, the mucous membrane of the bowel is moist, there is much mucus produced, and the mucous membrane is hypertrophied. Here the bacillus aerogenes capsulatus is most often found.

With our present meager knowledge of this disease, based on the pathological findings, it is impossible to make a scientific classification of cases, although a sigmoidoscopic study of the pelvic colon invariably shows changes in the mucous membrane. There are so many complications present that striking differences are always found in any two patients, and our colonic findings must be amplified by repeated examinations of the abdomen. It is our opinion that in every case a vicious circle is established. By the failing nutrition anemia develops, which lowers the resistance and endurance of the individual. A second factor is the psychasthenia and excitable character of the individual (exaggerated nervousness). Endocrine and metabolic disturbances may also be predisposing factors. A combination of

these influences upset the colonic functioning, thus causing toxemia. One of nature's protective efforts is the overproduction of mucus which engulfs myriads of bacteria and hurries them out, thereby producing the diarrhea. After the accumulated toxins and fecal matter have been cleaned out a quiescent period exists until the nervous system and metabolism are again upset. Thus these crises periodically recur.

Among the organic conditions which may cause colitis are:

1. Disease of the bowel itself, as carcinoma, syphilis, non-malignant stricture, fecal impaction, chronic tuberculous disease, mobile cecum, intussusception of the sigmoid, diverticulitis.

2. Extra colonic obstructions, as adhesions between the uterine appendages and the colon, malformations of the uterus, and floating kidney.

3. Functional failure of other abdominal viscera, such as enteroptosis, enterospasm, insufficiency of the liver, chronic appendicitis, and cholecystitis.

Bastedo[1] writing of the diagnosis of mucous colitis says: "As there is no distinguishing factor other than the mucus the diagnosis rests on: (1) the observation by the patient of the passage of mucus, either as strings accompanying the feces or as a complete mucous stool; (2) the finding of the characteristic mucus in a stool submitted; (3) the detection of the characteristic mucus after a test dose of castor oil or a test colon irrigation; or (4) the observation through a sigmoidoscope of a dry mucous membrane in the upper rectum to which are clinging heavy, tenacious sheets of mucus. If mucous colitis is sought for only when there is colic, many of the most important cases will be overlooked."

The mucus is tenacious and appears mostly in yellow, brown or sometimes black jelly-like masses, or in more or less desiccated placques, strings, ropes, or scab-like membranes. The strings may be many inches in length, and on being teased out in water prove to be casts of the bowel, or broad ribbons. Patients sometimes mistake them for intestinal worms. The mucus adheres with great tenacity to the wall of the bowel, so that when encountered postmortem it is removed with difficulty, even with forceps; von Noorden reports that he was unable to drive it off with a strong stream of water from a hydrant. Hence, it is not uncommon to find blood spots on the expelled mucus, as if it had been torn away like a scab. As a rule the mucus bears only a few leucocytes and is without fibrin. In some of the persistent cases I have frequently noted about the mucus an odor that is entirely different from that of the stools, slightly suggestive of dead fish just thrown on the beach and before they have become offensively putrefactive.

Besides mucus there are occasionally found quantities of blackish or brownish, gritty, irritating intestinal sand. Some authors report the frequent presence of blood in the stools (Mummery found it in 60 per cent of cases), mostly when scab-like membranes come away. It is regularly present in cancer cases, and frequently with polyposis; but in these cases the mucous colitis is not the important feature.

The pathological changes are indefinite; the colon sometimes shows very slight alterations or rarely no recognizable lesion, but usually the mucous membrane is more or less damaged. In some of the colons removed at operation the mucous membrane of the cecum and ascending colon has revealed a universally distributed area of inflammation, and the whole wall of this part of the intestine has shown atony, dilatation, and poor nutrition. In some cases Keith has demonstrated absence of the normal nerve elements of Auerbach's plexus with consequent cecal and colonic stasis.

The colon is often redundant or looped, and there is sometimes laxity of the abdominopelvic walls with ptosis of the transverse colon and of one or both flexures, with perhaps a movable cecum. In the persistently toxic cases, pyorrhea alveolaris and gastric achylia are not uncommon findings. Rarely cancer of the colon, polyposis, diverticulosis or some other localized lesion may underlie the condition. Not infrequently the descending colon is found in a spastic state.

Symptoms—When the patient presents

himself for examination we must be absolutely sure that he has mucous colitis. The first symptoms of an early malignancy, or ulceration of the bowel, which may be either simple or specific, resemble closely those of mucous colitis, and many patients have been treated for "mucous colitis" until it was too late to operate for a malignant condition which really was the cause of the trouble. The symptoms of colitis vary with the patient and in the same patient from day to day. The principal manifestation, however, is irregularities of the fecal evacuations, abdominal pain and tenderness, intestinal putrefaction, toxemia, and neurotic manifestations.

The patient usually presents himself during one of the diarrheal attacks, complaining of bloody stools. In the mild cases the blood-tinged mucus is voided only at the time of defecation, but in the severe cases there may be several evacuations, perhaps as many as ten each day, of quantities of almost colorless mucus and strings (tubular casts of the bowel). Upon careful interrogation a history of habitual constipation, interrupted periodically with attacks of looseness of the bowels, associated with flatulence and abdominal discomfort, usually worse at night, or after partaking of hot drinks, is elicited.

After each diarrheal attack has subsided constipation recurs. If the patient seeks a physician at this time it is not because of the colitis, but rather on account of a persistent constipation, lack of physical energy, obstinate or recurrent headache, failure of physical or intellectual vigor, mental depression or nervous prostration. In some cases several stools a day are passed, yet constipation exists because of the insufficient or retarded defecation.

The neurotic manifestations and the condition of mental and physical fatigability may in many instances be traced directly to a chronic toxemia caused by the absorption of harmful chemical substances found in the bowel. It is probable not only that the constipated bowel of mucous colitis favors bacterial proteolysis, but also that the damaged mucous membrane permits the absorption of deleterious material. There may be colitis without putrefaction of the colon contents, or there may be putrefaction of the contents without colitis, but the two conditions are often associated. At all times the patient suffers with some of the symptoms popularly called indigestion, namely, a coated tongue, gastric hyperacidity, intermittent achylia, lack of appetite, or dreamy, troubled sleep, and treatment is at times directed to these conditions when the real etiology is in the large intestine.

Abdominal discomfort is ever present. It may range in intensity from nothing more than a little soreness to paroxysms of the most distressing colic. It is usually exaggerated by the use of laxatives, and is particularly sharp just before, during or following defecation; its location may be variable or constant. This pain or soreness differs from that of ordinary colic in that it is made worse rather than relieved by abdominal pressure. At times the whole colon is found to be tender. Sometimes a period of constipation ends with the appearance of abdominal pain and flatulency, leading to a diarrheal attack which brings the sufferer relief. In other instances the pain has been so severe and constant that a futile operation has been performed for some other abdominal or pelvic lesion.

Occasionally I have seen pruritus ani, urticaria and angioneurotic edema, complications which suggest either protein sensitization as a result of absorption of minute amounts of unchanged protein through the diseased bowel wall, or the possible absorption of some chemical found in the bowel. Histamin is at times a product of intestinal putrefaction, and when absorbed in sufficient amounts is capable of producing urticaria and angioneurotic edema.

A test diet followed by a careful examination should be made in every case to locate the lesion and to study the haustral contractions and spastic areas. Spastic portions of the colon always indicate regions of irritation and toxemia. Mechanical obstructions may be discovered, as also dilatation of the cecum, chronic appendicitis, angulations, and strictures.

Lesions in the ascending and transverse colon nearly always are accompanied with much autointoxication, while those in the pelvic bowel because of the dry feces and the lack of absorption do not show toxemia.

The treatment of colitis must always be suited to the individual patient, and it should take into account the sympathetic nervous system, the endocrine and metabolic organs, the patient's domestic and industrial life, the evidences disclosed by repeated careful abdominal and sigmoidoscopic examination, together with bacterial and chemical studies of the feces. The treatment is long and tedious. Bastedo estimates that a year is the minimum time in which a cure can be effected. The treatment is directed at the prevention of the accumulation of mucus, and at the removal of the associated conditions, such as colic, constipation, intestinal toxemia, disturbed gastric conditions, bad mental states, and depressed general health.

Palliative treatment is directed toward the relief of the attack. In most instances it is advisable to begin with a full dose of castor oil (one ounce) and the administration of a soap-suds enema before the oil has had time to act.

This acts by making vigorous peristalsis, which, coming from above the mucus, tends to separate this from above downward, and to carry it onward, while at the same time it abolishes spasmodic obstruction through the peristaltic reflex which produces dilatation below and contraction above. No food is allowed at this time, but water is given freely. After the oil has acted intestinal lavage with four-per-cent sodium sulphate solution quickly produces detoxication by prompt and effectual removal of all offensive material from both the small and large intestines.

After the bowel has been cleansed an anticonstipation diet is provided. Water must be taken freely. I urge my patients to take a cup of hot water containing the juice of ½ lemon on arising and to follow with a glass of ordinary drinking water (not ice water) every hour until noon. This provides 8 glasses of fluid which is eliminated before the individual retires, and therefore does not disturb his sleep.

The bowels must be regularly, promptly and thoroughly emptied; no permanent results will be obtained until the patient has free and satisfactory evacuations. It is well to cultivate a habit of an early morning defecation, and our patient must make several such efforts each morning even if no success is obtained at the beginning. If the desire for stool comes on later in the day it must immediately be satisfied. By this practice thorough evacuations are obtained without resort to purgatives.

To overcome accumulation of mucus, one of the best measures is a weekly purge with castor oil, or perhaps calomel and salts, or a purgative blue mass or calomel pill. This may be supplemented by colon irrigations every day or two for a week, and then every three or four days for two to several weeks longer, or once a week for longer periods of time.

The dietetic treatment is important. Bacterial action on the end products of protein digestion produces most of the autointoxication and is therefore detrimental to these patients and should be replaced with fats and carbohydrates. An effort should be made to select from the foods customarily taken by the patient, and which are therefore more palatable to him, always remembering that the physical requirements must be kept up in all cases, but meat, fish, fowl, eggs are to be allowed only sparingly, the caloric values being kept up by adding cream, olive oil, yolks of eggs, and fresh butter. Carbohydrates such as the cereals and rice are our mainstay. Fruits raw and cooked should be taken at each meal. Cane sugar should be replaced with honey or milk sugar. Tea, coffee and alcoholics are forbidden. Milk is permitted by some clinicians and objected to by others. I permit milk with soups and gruels. But in all cases the diet should be ample and its quantity insisted on, for these patients readily acquire the habit of undereating because of a suspicion that this, that or the other article of food does not agree with them.

As to local treatment, much relief is ob-

tained by colonic lavage, but it must be properly and carefully conducted. All clothing should be loosened or removed from the abdomen and the patient placed in the lateral position for the first gallon of water admitted to the bowel in order to clean out the lower colon, and then on the back for the rest of the irrigation in order to enable the fluid to reach the cecum. Some clinicians prefer the knee-chest position throughout the whole treatment. This latter position is not comfortable for the patient.

Some time preceding the lavage the bowels should be emptied, if necessary by an enema, in order to avoid carrying feces back to the cecum and to avoid starting up by the lavage the defecation reflexes which will prevent the passage of the water into the upper colon. The liquid used should be rather hot, and I regularly employ tap water, though occasionally I use sodium bicarbonate solution, a drachm to the pint (sodium bicarbonate is changed to carbonate by heat). Physiological sodium chloride solution is not employed because it makes the patient thirsty. The amount required is usually 12 to 24 quarts, and it should be given slowly, with the reservoir about two feet above the patient. Frequently the putrefactive cecal contents are reached only after 4 or 5 gallons have been employed. If the irrigation does not bring out the mucus, this may be expelled one or several hours later. I consider an irrigation a failure if no water is retained to be evacuated after the irrigation is finished, or if the water returns clear throughout; obviously, in such cases the liquid has failed to get past the spastic descending colon or sigmoid.

Some enterospasm is always excited, and this is in proportion to the rapidity with which the liquid is admitted. The irrigator tip need only be introduced past the sphincters into the rectal ampulla, a distance of three inches.

Where much pus or bleeding is evident I have sometimes substituted a two-per-cent solution of ichthyol or calumbo with the flushings, and with happy results.

To relieve enterospasm an injection is given at bedtime of one-half to one pint of warm olive oil or cottonseed oil, to be retained over night or as long as possible, a towel being placed over the anus and a rubber sheet on the bed as protection in case of leakage. This injection is often followed by passage, a few hours later, of the oil, and an abundance of mucus, with disappearance of the colic and no recurrence for a long time, if at all.

Some patients also suffer considerable enterospasm and even shock by the administration of an enema or lavage. This may perhaps be relieved by the application of a large hot abdominal pack, but if this fails the flushings must be discontinued.

Sometimes a cathartic taken the same night as an irrigation that seems unsuccessful may bring away great quantities of mucus that has apparently been softened by the irrigation water.

The chief indication for drug therapy is to relieve the constipation, and to this end the author's experience has been most satisfactory with transintestinal lavage twice weekly. Others prefer an occasional dose of castor oil (1 ounce at bedtime).

For the diarrhea salicylate of bismuth grains 5 every three hours affords great relief, and for the hyperacidity of the stomach Lynch[2] recommends one teaspoonful of peroxide of hydrogen with meals.

If there is any definite surgical condition in the abdomen, such as appendicitis, cholelithiasis, adhesions, bands, or pelvic disturbances, it should be overcome.

The definitely neurological patients are most difficult to help because they persist in doing those things which they ought not to do, and do not do those things which they ought to do. Here we must enforce a full quota of rest, restriction of social functions and late hours, and abstinence from tobacco and alcohol.

Nervous excitability and pain may be relieved by rest in bed, a large dose of bromide, ½ to 1 drachm, or barbital gr. 5 to 10. Enterospasm is best controlled by a hypodermic injection of atropine sulphate 1/60 gr. and hot applications to the abdomen in the form of an electric pad, or the electric

blanket is better, hot stupes, or a hot bath. Because of the habit formation in neurotic subjects opiates should not be used at all, not even in the form of opium suppositories.

A sojourn in the country, or a rest cure, free from domestic and financial worries, together with a course of baths, is most beneficial. It is said that a successful physician with a deep perception of human incompatibilities had a colitis case with markedly neurotic symptoms whose over-anxious wife was constantly appealing to the doctor until the wise medical man said, "Madam, your husband needs a rest. One of you must take a vacation."

These patients are anemic and in poor general health, and aside from the colonic indications they need improved hygiene, better food, fresh air, cleanliness. Tonics like elixir of iron, quinine and strychnine, one drachm with each meal, or malt extract or the glycerophosphates, must be constantly exhibited, but the style of tonic changed occasionally.

When the destructive agents exciting the colitis have become sufficiently aggravated, they produce extensive ulcerative changes. The original bacterial cause may have been the ameba dysenteriæ, tubercle bacillus, streptococcus or colon bacillus, but when the tissue necrosis has occurred, other hordes of intestinal bacteria contribute to cause a mixed infection, and the clinical condition continues regardless of the presence or absence of the original type of infection.

Polypoid excrescences may develop in any chronic inflammatory disturbance when associated with ulcerative changes. During prolonged ulcerative process in the colon deep erosions extend through the mucosa, and islands or tags of mucosa with the submucosa are left. These are more frequently found along the line of the attachment of the mesentery. Bassler[3] suggests that as this arrangement conincides with the blood supply of the bowel it is probable that the blood supply of these small and localized areas may have been sufficient to withstand the destructive action of the inflammatory process so that necrosis did not take place, and a productive hyperplasia of the mucous glands and the submucous connective tissue with consequent polyp-like formations ensues instead.

These cases begin as a general colitis, going on to ulceration, which is usually extensive, at which time ragged tags of mucosa are seen hanging from the surface of the bowel. Hewitt and Howard[4] from a study of their cases conclude that "as the process ameliorates and healing begins the irregular margins of these tags become smoothed off and remain as rounded sessile elevations or as polypoid projections of the mucous surface. The portions of the mucosa that remain in these areas regenerate over the surface around the base of the pedicle and, if conditions remain favorable, ultimately over the barren and denuded submucosa, and together with submucosa over the muscular layer. The mucosa may thus be completely restored, and with its numerous scattered polypous projections present a perfect picture of colitis polyposa. Coincident with the process of healing and later, the proliferated fibroblasts begin to contract as in the cicatrization of a wound. This leads to an occlusion of the orifices of certain of the tubules situated in the polypi and over the mucosa between the polypi. There is an accumulation of secretion in these occluded tubules with the ultimate formation of retention cysts. These of course increase in size as long as there are secreting cells in their walls, and as there are a greater number of tubules over the surface of the polyp than over the surface of the mucosa, the polyp may appear as a collection of small cysts which Virchow has designated as "colitis polyposa." It is the end stage of colitis polyposa.

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The Treatment of Gastric Ulcer

BY W. E. DEEKS, M.D.

General Manager Medical Department, United Fruit Company, New York

The modern conception of the etiology of disease is based largely on laboratory and post-mortem findings. Due consideration has not been given to those physico-chemical changes which are frequently the predisposing factors favoring bacterial invasion; and the character of the invading bacteria generally determines the nature of the resulting morbid process or lethal termination. This is particularly true of the so-called diseases of metabolism.

It is well known that a great many diseases are the direct result of the invasion of the human organism by specific microparasites which produce, through their toxins, more or less definite symptom-complexes and pathological entities as a result of their selective action on tissues.

There are, however, a great many morbid processes, the predisposing factors of which rest on imperfect metabolism due to improperly balanced diets continued over indefinite periods. In this connection it should be remembered that bacterial invasion is only a secondary process, as without nutritional deficiencies bacterial invasion would not be possible.

The pathological condition referred to may come about in at least two ways:

First, if there is not sufficient quantity, or high enough quality, of elemental material available for the building up of normal, healthy tissue, then weakened tissue will be formed; consequently, there being lowered resistance, the human organism will be liable to bacterial invasion.

Second, if food components are not well balanced, and excessive amounts of proteins, fats, or carbohydrates are ingested, out of all physiological proportion to what can be digested and assimilated, then the excess of these components will putrefy or ferment. The result is, naturally, the formation of gas and toxins, which the system must eliminate, but which frequently give rise to subjective symptoms and local irritation. For the toxins, after being absorbed into the circulation, and during the process of elimination by the organs of excretion, are selective to tissues, which they irritate. In this way they favor bacterial invasion.

Gastric ulcer signifies a tissue lesion, and for its resolution the only treatment indicated is either to remove or to rectify the condition that caused it; and Nature will then take care of it without any special medication. It is a serious condition, not only because of the distress that it causes, but also because of its potential menace to life. For there is a possibility of perforation of the viscus and erosion into the large blood-vessels; not to speak of a later sequela, which is prone to become engrafted upon it, namely, malignancy.

Because of the elaborate and complicated methods now employed in the treatment of this rather common condition, the writer desires to present a simple method of treatment, which he has employed for a number of years with exceedingly satisfactory results. This method, of course, is not applicable to complicated cases in which there are stomach abnormalities, inherited or acquired; in such cases surgical interference is absolutely necessary. However, in many cases when surgical interference has become necessary, relapses are prone to occur—a result distressing both to the patient and to the physician—unless the general principles of diet indicated below are more or less strictly adhered to.

It is not my intention to discuss here the causes that are generally considered as underlying factors in the etiology of ulcer, nor to enumerate the symptoms that are generally attributed to it, as these subjects are covered in more or less detail in almost every text-book.

There is, however, in the dietetic history of every gastric ulcer case one constant etiological factor, which necessitates consideration. In the writer's opinion this factor is responsible for the morbid process, and upon the correction of it will depend the successful outcome of the treatment. I refer to an improperly balanced diet, by

which is meant, in this case, a diet that contains an excessive amount of starches and an insufficient amount of vegetables and fruits. It is the writer's opinion that neither proteins nor fats play any rôle in the etiology of this disease.

In every human body tissues are constantly being formed throughout the life of every individual, not only during the period of growth, but after maturity is reached, when tissue waste is continually undergoing repair. Note, for example, the blood, which may be considered as a tissue. The red cells live, approximately, only ten days, and the white cells probably survive for an even shorter period of time. Under normal conditions, in the average individual probably 500,000 red cells come into existence every day to replace those that are worn out. We do not know how often the cells of other tissues are rejuvenated, but we do know that the process of tissue-cell formation is continually going on.

Now, for the building of tissue cells the following elements are necessary: amino-acids, inorganic mineral salts, vitamins, and water. Amino-acids are the split products of proteins derived from digestive agencies. Inorganic mineral salts, as well as vitamins, come mainly from vegetables and fruits.

The exact functions of the vitamins—how they act and the chemistry involved—are unknown. Apparently their action is similar to that of the hormones or endocrines. In some way or other they stimulate metabolic activity, and their presence is necessary in the chemical changes that take place in the blood. They are powerfully active substances and essential food factors in the processes of growth and the maintenance of health. Moreover, they are necessary to the proper functioning of all glandular structures involved in digestion, and they are also vital to the action of all the endocrine, or ductless, glands that play such important rôles in the life processes. Man, in common with most other animals, cannot synthetize the vitamins, but must obtain them in the food, from either animal or vegetable sources. If, therefore, these vitamins are lacking in food, all sorts of digestive and nervous disturbances are liable to result.

Although all cereal grains naturally contain mineral salts and vitamins in the germ and epidermal layers, these elements are largely removed in the milling processes in order to improve the appearance, keeping qualities and palatability of the cereal products. Hence all foods prepared from these denatured cereal grains, such as bread, cake, breakfast cereals, etc., are deficient in essential materials for tissue building, and are not a satisfactory source of vitamins.

There is another important factor to consider in this connection. Unless the blood possesses the necessary alkalinity, the vital processes cannot be properly carried on. The ash of all flesh-foods (meat, fish, eggs, etc.), cereals, tea and coffee is acid; that of animal fats, vegetable oils and sugar is neutral; and that of legumes, tubers, fleshy roots, leafy green vegetables, fruit and milk is alkaline. Therefore we cannot maintain the proper alkalinity of the blood unless we include the last group as an important part of the food supply. If this group is neglected, acidosis and consequent diminished tissue vitality will result. To build healthy tissues, therefore, we require protein food, vegetables, and fruit, as these contain, for the most part, the essential tissue-building elements.

Carbohydrates and hydrocarbons are the main sources of supply of heat and energy, but are not tissue builders; although they may have to do with the accumulation of adipose tissue.

A gastric ulcer is a tissue lesion, and its repair cannot be accomplished unless suitable material is available for the purpose. When people eat excessively of the starchy and sweet foods, naturally they take an insufficient quantity of vegetables and fresh fruits. Carbohydrates taken in excess are subject to fermentation, and this is particularly true of all saccharine food-material. The resulting products are acids and gas. These are largely responsible for the excessive acidity and the flatulent conditions associated with digestive disturbances, which precede the development of, and are asso-

ciated with, a gastric ulcer. If such an ulcer is suspected or diagnosed, it is very important to investigate the teeth, tonsils and sinuses for focal infections, as they undoubtedly play an important rôle in its etiology, although some of these infections are in all probability the direct result of the excessive use of carbohydrates. Attention, then, must be directed, on the one hand, toward obtaining a proper and adequate supply of foods from which healthy tissues can be built; and, on the other hand, toward limiting the intake of the carbohydrates, particularly sugars, which are readily fermentable.

In order that a patient suffering from gastric ulcer may be treated intelligently, the sources of food components must be kept in mind.

We obtain our proteins from the following sources:

(*a*) Meats (including poultry and game); glandular tissues (liver, kidney, etc.); fish, shellfish, milk, cheese, and eggs.

(*b*) Cereal grains (wheat, rye, corn, oats, rice, and barley); legumes (peas, beans, lentils); and nuts. This group furnishes us also with an important starch supply.

Proteins from animal sources are more valuable, for tissue building in the human organism, than those from the vegetable kingdom, because: (1) Their amino-acids more closely approach, in number and constitution, those of our own tissues. (2) They are more easily digested and more completely absorbed. (3) They are better stimulants of metabolism.

The consumption of protein in excess of physiological requirements causes intestinal putrefaction, malodorous stools, and excessive work by the kidneys in order to eliminate nitrogenous wastes.

Fats are consumed in the form of butter, bacon, pork, and other fat meats; fat fish, and vegetable oils such as olive, cocoanut, cottonseed, peanut, cocoa, and the like. Manufactured combinations of fats, such as margarine, also belong to this group. All fats serve mainly as rich sources of heat and energy, are slow in digesting, and when taken in excess retard the digestion of other foods.

As to starches, we obtain them chiefly from the following sources:

(*a*) Cereal grains (wheat, rye, oats, corn, rice, barley, etc.), and their manufactured products in the form of bread, cake, biscuits, macaroni, spaghetti, hominy and other breakfast cereals, etc.

(*b*) Legumes (beans, peas, and lentils).

(*c*) Tubers, examples of which are potatoes, sweet potatoes, yams, cassaba, and cocoa. Breadfruit may also be classed with these.

(*d*) Fleshy roots (carrots, beets, turnips, parsnips, etc.).

(*e*) Sago, tapioca, arrowroot, etc.

The sources of our sugar intake are:

(*a*) Manufactured products of the sugar-cane and of the beet and the sugar maple, in the form of sugars, molasses, and syrups.

(*b*) Glucose, manufactured from corn.

(*c*) Honey, consisting of glucose and levulose.

(*d*) Fruits. Sugars from this source are mainly in the form of invert sugars.

Salts and vitamins are derived mainly from the following sources: Green leafy vegetables such as cabbage, Brussels sprouts, cauliflower, Swiss chard, kohlrabi, spinach, calalu, asparagus, lettuce, celery, etc. We may group with these, also, tomatoes, chayoti, onion, okra, green peas, and string-beans. The caloric value of these vegetables is practically *nil*, but as foodstuffs they are very important; for, because of their bulk and their cellulose contents, they perform the following important functions:

1. Distribute the digested elements of the protein, fat, and the carbohydrate foods.

2. Because of the acid fermentation of their cellulose content in the intestinal tract, they prevent the action of putrefactive bacteria on the protein foods.

3. Counteract the tendency to constipation.

4. Neutralize the acid salts of meats and cereal foods, as they are rich in inorganic alkaline salts. (In this respect their action is supplemented by the tubers, fleshy roots, and fruits.)

5. Furnish an abundant supply of vitamins.

Fruits are valuable because of flavor and

laxative properties, as well as their vitamin contents, with which the citrus fruits are particularly well supplied. Those that possess 10 per cent or more of carbohydrates are valuable also as sources of heat and energy. Their salts, like those of leafy green vegetables and tubers, are alkaline. Fruits are rich in potassium in combination with citric, tartaric, and malic acids, forming salts which in the blood are converted into alkaline phosphates, carbonates, bicarbonates, etc.; and these are important in maintaining the alkalinity of the blood.

Nuts are rich in proteins and fats, and are well supplied with vitamins. They possess considerable cellulose, and consequently are not easily digestible unless finely ground, or well masticated when eaten.

In the treatment of patients suffering from gastric ulcer we must select a diet that contains suitable amounts of protein, inorganic mineral salts, and vitamins, in order to repair the tissues; and, in addition, we must see that carbohydrates and hydrocarbons are present in sufficient quantity to furnish the necessary heat and energy.

The following diet, therefore, is recommended:

Breakfast: Juice of an orange or of some other fresh fruit; eggs (preferably coddled, poached, or soft-boiled); stale bread—one or two slices—or toast with butter; milk, or else coffee with milk or cream, but without sugar. (*Note*—Coffee or tea should always be taken without sugar.)

Luncheon: Vegetable soup; stale bread—one or two slices—or potato with butter; green vegetables (cooked); fresh fruit; milk, hot or cold.

Dinner: Minced meat, chicken, or fish; stale bread—one or two slices (preferably made from whole-wheat flour)—or one potato of average size; green vegetables (cooked); salad (lettuce, tomato, romaine, celery); fresh fruit; coffee or tea if desired.

This form of diet will be suitable for about three weeks. Then it may be broadened and increased, as follows:

Breakfast: Fresh fruit; eggs, with or without bacon; stale bread—two slices—or toast with butter; coffee or tea with milk or cream, but without sugar. A cereal may be allowed if desired, but should never have sugar added to it.

Luncheon: Meat, poultry, or fish; potato, rice or bread (the equivalent of two slices); green vegetables; fresh fruit; tea or coffee if desired, with or without cream or milk.

Dinner: Similar to the luncheon, but soup and salad may be added as additional courses.

This permits of a generous, well-balanced diet, and, after the trouble has been eradicated, it should be strictly adhered to during the ensuing years if the possibility of a recurrence is to be avoided.

Medication is recommended for cases suffering from constipation—for which mild laxatives are indicated—and for those in which there is excessive acidity, as evidenced by heartburn, flatulence, etc. The administration of 15 drops of diluted nitric acid in a tumbler of water before meals will promptly relieve the symptoms by inhibiting fermentation and the formation of organic acids. A teaspoonful of some preparation of pepsin (such as the essence) added to the nitric-acid mixture, makes it more palatable.

Under this method of treatment, in the ordinary cases of gastric ulcer, it is not necessary to confine the patients to bed; they may follow their ordinary occupations.

Though this treatment is applicable to the majority of cases of gastric ulcer, more precautions are necessary if hemorrhage is present. Under these conditions absolute rest in bed is necessary, with local applications of ice until the hemorrhage ceases. Generally morphine with atropine is indicated to relieve the anxiety, promote sleep, and quiet the peristaltic movements of the stomach. Nothing should be taken by mouth for twenty-four hours after the hemorrhage ceases. Meanwhile, the mouth should be kept clean, and thirst relieved by rectal enemata.

On the third and fourth days nutrient enemata may be administered every four to six hours—glucose 1 ounce, whisky or brandy one ounce, normal saline solution 10

ounces. On the fifth day, 2 ounces of orange juice may be given at intervals of every four hours, and 4 to 6 ounces of milk every four hours, alternating it with the orange juice, in order that the patient may take orange juice or milk every two hours. On the sixth day, 4 ounces of orange juice should be given in the morning, followed by an egg (coddled, poached, or soft-boiled), with a slice of stale bread, or toast with butter, and milk or coffee if desired. At noon, vegetable soup, baked potato and butter, with some puréed vegetable, and a glass of milk, may be taken. The evening meal may be practically the same. This form of diet may be continued until the tenth day, when the diet indicated for cases without hemorrhage may be initiated.

In general terms it may be stated that the starchy foods at any individual meal should never exceed the equivalent of two generous slices of bread, whether they be taken in the form of bread, potatoes, cereals, or other starchy food. Moreover, artificially sweetened foods or drinks should be absolutely avoided—a rule that naturally prohibits the use of all sweetened cereals and deserts.

For patients suffering from duodenal ulcer, the same principles of treatment are applicable, but they must be persisted in longer than in the treatment of simple gastric ulcer. Since, however, the ulcer is located in the narrow lumen of the duodenum, through which practically all nutriment must pass, as the ulcer heals there is development of cicatrical tissue, followed by contraction, which narrows the lumen of the duodenum. This may lead to more or less obstruction, and thus necessitate surgical interference. Moreover, these cases do not yield as rapidly to treatment as those with simple gastric ulcer.

In conclusion, it may be stated that stomach ulcers occur generally in people who consume an excessive amount of carbohydrates and an insufficient amount of green vegetables and fresh fruits. This form of diet is deficient in tissue-building elements and vitamins, and, moreover, is subject to fermentation and the formation of organic acids and gas. Such food also possesses an acid ash, which tends to develop acidosis. When the diet is corrected along the lines suggested above, Nature will take care of the uncomplicated gastric ulcer. The same dietetic principles are indicated in the treatment of people suffering from many of the so-called diseases of metabolism.

Discussion on Eye Injuries and Interstitial Keratitis.

In the *British Medical Journal* of August 29, 1925, POLLOCK states that on examination of cases of keratitis interstitialis, and indeed of all external diseases of the eye, it is important to place a patient before a good light from a window, so that the reflection made by the window can be observed on the cornea.

If inflammation is present in the middle and deeper layers of the cornea, such as in keratitis interstitialis, then the reflected image of the window will be perfectly clear and not distorted, as in the normal eye, but in the acute stage it will be dimmed. Tuberculous interstitial keratitis may simulate syphilitic in all respects, and be extremely difficult to diagnose. That variety of conjunctivitis accompanied by the formation of phlyctenules on the surface of the cornea and the limbus just outside the corneal margin may be mistaken for interstitial keratitis. It will be noticed, however, that the vascular infiltration is only conjunctival, and that there is no deep circumcorneal congestion, as in keratitis interstitialis.

A great deal of work has been done in France recently on examination with the slit lamp and binocular microscope, and shows the inflammation distinctly limited to the middle and deeper layers of the cornea, with the presence of deposits on the posterior surface of the iris. Attempts have been made to diagnose the disease by the slit lamp, but it has not yet been possible to distinguish with certainty tuberculous and syphilitic cases.

In former times great stress was laid on Hutchinson's triad: keratitis interstitialis, the characteristic peg-shaped teeth, and the

nodes on the tibia. Other writers have laid stress on the presence of ozena and rhagades.

The Wassermann test should be performed in every case. It is the only certain method of distinguishing these two affections, although it must be remembered that both may be present simultaneously.

The treatment of syphilitic interstitial keratitis has for many years been carried out by the use of mercury administered either by inunction or internally. It was not until he saw the results of Lee's work in Edinburgh that he realized what could be done by the administration of arsenical compounds. Since that demonstration he has put all his cases under the venereal specialists for treatment by modern methods. They use stabilarsan, giving 0.015 gramme intravenously. If neosalvarsan, or novarsenobillon, is employed and a portion escapes under the subcutaneous tissues, it sets up more or less troublesome irritation. Stabilarsan does not give any trouble if it escapes into the tissues from the vein, and it seems to be tolerated very well by almost all the cases he has had under his care. The dose is repeated weekly for eight or ten weeks, and is accompanied by the administration of mercury, hydrarg. cum creta, ferri et potassii tartras, and milk sugar, 1 grain of each once daily, or the mercury can be given by inunction. His usual practice is to ask for the blood to be taken immediately he has made his diagnosis, and to have an injection given at the same time, after the blood is taken, if possible. This is to save time, because if the treatment is commenced at once it is possible to save the disease from occurring in the second eye, and to prevent blindness of the first eye.

If both eyes are implicated, then the treatment must be commenced at once, because the longer it is left the more destructive will be the processes on the cornea, and consequently the denser the opacity left on the cornea. The rapidity with which the disease may advance shows that the treatment is urgent if blindness is to be prevented.

After a course of treatment such as indicated above, one may omit the treatment for a month, and then commence a second course. During the interim the mercury and iron may be omitted, and the child put on nux vomica and syrupus ferri iodidi; some surgeons give, in addition, thyroid extract, 1 or 2 grains, if necessary.

The course should be repeated as long as there is any improvement in the cornea, even after the blood becomes negative, and only when the opacity persists in spite of all treatment can one consider the question of stopping the courses. He is certain that by efficient treatment it is possible, in certain cases, to prevent the implication of the second eye.

Sometimes the courses have been substituted by silver salvarsan; this has been tried and recommended by Harrison, and it seems to do very well.

While the patient is under treatment with these drugs it is most important to watch continuously for the onset of jaundice. The venereal specialist to the Glasgow Eye Infirmary, Primrose, has suggested that the child should be given sulphur with cream of tartar and treacle, a desertspoonful twice a week. If jaundice supervenes the patient should be given intramine or contramine. The kidneys must also be watched and the urine tested regularly to see that no damage is being done there, in which case it is necessary to stop the treatment at once.

For local treatment he gives atropine with dionin 2 per cent and vaselin, and also belladonna lotion. The dionin helps to clear the opacity in the cornea, and the atropine to relieve the iritis which always accompanies the condition; the sooner the pupils are dilated the sooner the inflammation and redness subside in the eye.

For tuberculous cases he gives injections of tuberculin 1:50,000 mg. for three weeks, then increases it to 1:25,000 for three weeks, and up to 1:20,000 and 1:10,000. In cases in which there is tuberculous infection with syphilitic basis, the combined treatment is necessary. In cases in which there are septic teeth, removal of these is necessary, and the internal treatment should be nux vomica and iron.

Editorial

ANTISEPTICS AND BLOOD-STREAM INFECTION

Our readers will recall that in the issue of the GAZETTE for July we published several papers dealing with the use of mercurochrome-220 in the treatment of bacteriemia. Almost every month one or more papers appear in medical literature dealing with this important subject. Thus Gatch, Trusler and Owen have recently investigated this subject both by means of animal experimentation and the use not only of mercurochrome-220, but of gentian violet as well, in animals which had been inoculated and in human beings who presented definite evidences of infection not only as to their symptoms, but in whom the diagnosis was confirmed by blood cultures.

Their paper is of interest from many points of view. It starts out in a manner which leads one to believe that the writers are very much more optimistic in regard to what may be accomplished by the intravenous injection of these substances than some of the other members of the profession who have experimented, or tried clinically to determine the position of these agents. Thus they state that the entry of bacteria into the blood-stream is a relatively frequent occurrence and in most cases is not attended by consequences of a serious character. Without doubt this is true, although there can be little actual proof adduced to confirm the statement, and it should not give the impression that bacteriemia is a condition of little importance.

They then state that a patient with general septicemia will nearly always recover even if very sick, provided his focus of infection is removed by drainage or amputation, and provided he is not suffering from some debilitating disease. These provisions, of course, are somewhat akin to the statement that was once made by a well-known homeopathic teacher, to the effect that no case of pneumonia had ever died under his treatment, provided he had seen it early enough. The ones that died he had not seen early enough, of course.

In many instances it is not possible to remove the focus of infection, as, for example, in the septicemia arising from some uterine condition. In other instances it is a grave question as to whether an attempt should be made to remove the original focus of infection during its acute stage, as, for example, where there is undoubtedly a blood-stream infection arising from acutely diseased tonsils, or where it arises from a carbuncle, particularly if it affects the upper lip. In both of these instances the removal of the infecting focus opens up so many avenues for entrance of further infection as to practically insure the overwhelming of the patient.

These authors make the further statement that a healthy patient with general septicemia from a focus which cannot be removed by drainage or amputation will frequently recover, provided he survives the first few days of his infection. This, of course, is in a sense correct, much depending upon how healthy the patient is, how virulent the infecting organisms are, and how long a time elapses between the blood-stream infection and his coming under medical or surgical care. They quote an instance of a woman who came under treatment very late in her infection, with repeated chills daily, a condition of stupor and hemoglobin under 20 per cent, who nevertheless after several large transfusions of blood made a complete recovery without intravenous injection.

Furthermore, they add this important statement: that if the primary dose of bacteria is not overwhelming, the infecting area may be walled off, and so the blood may be able to deal with the microörganisms that have already entered it, which is nature's way of saving the patient, a way destroyed if the focus of infection is operated on.

As we have said before, these statements are optimistic, but they are modified in their influence by the very proper remark that any agent known at the present time which has the power to kill one form of protoplasm also possesses the power to devitalize protoplasm that we do not wish killed.

Furthermore, it is obvious, as they point out, that so-called blood antiseptics cannot be introduced without some definite knowledge as to the affinity which the drug may have for the protoplasm of a given germ. Aside from the fact that this obviously must be true, it has been known for years that gentian violet is destructive to gram-positive organisms and is not destructive to gram-negative organisms, and therefore it seems to be indicated where it is shown that the staphylococcus aureus is the infecting agent.

It is evident, therefore, that intravenous injections should not be used in septicemia without definite knowledge of the character of the infecting organism, as it may be just as futile to make such an injection as it would be to give diphtheria antitoxin in a case of tetanus.

The advantage of mercurochrome would seem to be that it is destructive to both gram-positive and gram-negative organisms, but even those who have been most enthusiastic in its use report experiments upon animals and clinically which show that it is by no means always successful, and Piper, to whom we owe very valuable animal and clinical investigations on this subject, is one of the most conservative in his conclusions.

As one reads the paper of Gatch *et al.* he is interested to see that the authors report cases which got well without such injections although they were severely infected, and in the conclusions which are appended to their article it is admitted that both gentian violet and mercurochrome fail to produce complete sterilization of the blood-stream and that a large dose of either drug injected in the presence of an overwhelming infection may hasten death, but the belief is expressed that when they are properly employed, they may aid the protective processes of the body sufficiently to enable the patient to become victorious. In other words mercurochrome and gentian violet, while they may be considered as valuable adjuncts, are not really curative, and recoveries from septicemia from other treatment may be equally remarkable.

One of the difficulties in arriving at a correct conclusion is the fact that, so far as we know, little or nothing has been done to determine what these agents do to the phagocytes and to the functions of the various portions of the body by which antitoxins are produced. It may be true that experiments and clinical investigation show that a blood-stream can be made temporarily sterile, and yet such an improvement may be fictitious in the sense that it is of use to the individual, because the agent which destroys the invading parasite may also interfere with, or entirely prevent, the exercise of the most important factors that we have in combating infection. This is illustrated by the fact that were one to have a patient with a blood-stream infected by the microorganism of meningitis he would certainly resort to an antimeningococcic serum rather than to the intravenous injection of a dye-stuff.

A word more should be said in regard to the strengths which Gatch, Trusler and Owen think should be employed in human beings by intravenous injection. The gentian violet that they use is a 1:200 solution made up in sterile distilled water, containing, therefore, 5 mgm. of the dye in each cc, and resulting in the use of 45 cc for a patient weighing 100 pounds. Stronger solutions than this tend to produce thrombosis, and they advise that a preliminary dose of 2 mgm. per kilo of body weight should be employed, using a larger dose later. With mercurochrome, a one-per-cent solution is in their opinion the best strength, since stronger solutions are prone to produce diarrhea, ptyalism, and other disagreeable effects.

Whether mercurochrome or gentian violet is employed, there is apt to be a sharp temperature reaction and a chill. How much this is due to the hemolytic effect of the distilled water and how much to the action of the drug is difficult to determine.

We think it may be said with truth that up to date this method of therapeusis is still in its trial stage. The cases in which it has failed may be considered as instances of overwhelming infection with such changes in vital organs that death is inevitable even

if the blood is sterilized, or that the treatment is resorted to so late that no remedy will prove efficient.

In the experience of the writer, it has been proved beyond doubt that unless the kidneys are healthy the intravenous injection of mercurochrome may be most disastrous, resulting in acute suppression of urine.

Simultaneous with the appearance of the paper of Gatch, Trusler and Owen, a pioneer in the intravenous use of mercurochrome, namely, Piper, has published a paper which contains much of interest. After pointing out that distinction ought to be made between bacteriemia and septicemia, in that the first condition represents a temporary presence of bacteria in the blood and septicemia a condition in which the bacteria are rapidly multiplying within the blood-stream usually increasing in virulence with great rapidity, he goes on to tell us something of his additional experience at the bedside. At no time has he been able to make any impression upon the streptococcus viridans nor upon the streptococcus fecalis, and in the hemolytic group he tells us that the pyogenes have been routinely fatal, but on the other hand he states that in a number of children suffering from septicemia after mastoid operations he has had a number of satisfactory results, and he reports a case of a practically moribund small child suffering from erysipelas who recovered following one dose of mercurochrome.

He then adds that, except for one case of staphylococcic endocarditis, no success has attended injections for this infection.

Piper also emphasizes the fact that this method of treatment is of no avail unless it is accompanied by sane surgical procedures, and he believes that almost never is it possible to sterilize the blood-stream where there is a local focus of infection that has not been drained or removed, a very natural conclusion, since as rapidly as the organisms present in the blood-stream are destroyed, fresh ones enter. To illustrate his wise and conservative attitude he states that in spite of the fatalities which he has seen occur after this use of mercurochrome, he believes that death would have been inevitable in some patients, and he is confident that there are many people alive today who would have died had this treatment not been instituted.

To his article in the *Journal of Obstetrics and Gynecology* he appends the following well-stated conclusions:

"This treatment is not unattended by danger.

"Were we able to give larger doses safely, we could unquestionably temporarily sterilize the blood-stream.

"The use in smaller doses, as a prophylactic measure, both in the puerperal state and in other conditions where septicemia is imminent, should have careful consideration.

"Its use in puerperal septicemia *per se* is most discouraging, though there have been some good results.

"In spite of various investigators who contend that the penetrability of some synthetic preparation will eventually solve this problem, he is of the opinion that there is some other, at present unknown, factor which must first be determined before we may successfully eradicate blood-stream infection.

"No intravenous medication will avail without common-sense surgery."

It may be stated with confidence that the future will produce drugs which will be specific for each individual form of infection, and that until such specific parasiticides are found the intravenous use of antiseptic drugs will be of necessity haphazard, that is, useful if the drug fits the infection, and useless or harmful if it does not. At present such an injection is made with hope rather than with assurance.

PERNICIOUS ANEMIA.

Notwithstanding the fact that pernicious anemia has been recognized as a definite clinical condition for many years, we are still in the dark as to the underlying causative factor. Innumerable theories have been advanced and investigations carried out, none of which up to date have been conclusive.

It is not possible in this editorial note to call attention to all the various theories and researches to which we have referred, but it would appear to be increasingly evident that pernicious anemia is primarily a form of toxemia and that the toxins probably arise from the growth of an unusual number of pathologic organisms of a particular type in the alimentary canal. These toxic substances not only cause the constantly advancing blood changes which are so familiar to bedside clinicians, but as the disease progresses, and sometimes in its very early stages, spinal cord lesions, commonly of the spastic type, also develop. It is noteworthy that such changes are probably not the result of the anemia, because they do not occur in secondary anemias, but they do occur in certain forms of exogenous intoxication, as, for example, ergotism and pellagra. So, too, atrophy and degeneration of the gastric tubules has led Hunter and others to believe that this was a primary factor in the disease, and the small capillary hemorrhages which sometimes occur are also probably the result of the absorption of some toxic substance which attacks the wall of the capillaries rather than directly of the anemia.

The subject is of pressing importance at this time, because in our experience the number of cases of pernicious anemia which are met with in practice is increasing in a remarkable manner, and for this reason we want to call attention to a paper which has recently been published in the *Journal of Infectious Diseases* by Moench, Kahn, and Torrey, which would seem to indicate that the bacillus Welchii may be a very important factor, and possibly the real factor, in producing this pathological state.

They found in 72 stool specimens from 33 cases of pernicious anemia of various duration in every instance an usually large number of virulent organisms, of which the bacillus coli, streptococci, bacillus Welchii, and at times the bacillus acidophilus, were the most prominent, indicating that the flora of the large intestine is of an actively growing non-proteolytic fermentative type. That the streptococci found are not important factors would seem to be indicated by the fact that they run true to the normal intestinal types and no representative of the hemolytic group was met with. Furthermore, pure cultures of bacillus Welchii were isolated from 26 of the 33 cases, and most of them were strongly hemolytic, although it is true that they could not be said to be of greater potency in this respect than were strains taken from normal human intestines. In other words, the hemolytic changes were not so much due to the presence of the bacillus Welchii and associated organisms as they were due to the fact that in this disease an excessive number of these parasites are present, and not only are found in the large intestine but also in the small intestine, often as high as the upper part of the duodenum. It may be that their presence so high up in the digestive tract, where absorption goes on very much more rapidly than in the colon, is one of the factors which results in severe intoxication.

While apparently believing that the bacillus Welchii is, therefore, worthy of the greatest attention in connection with this disease, in view of its ability to elaborate a potent hemolysis, an irritating acid, and neurotoxic substances, these authors are not as yet prepared to assert that they have discovered the cause of the disease in all cases.

From the therapeutic standpoint it may be said that up to date no method of so-called intestinal antisepsis has proved of material value in cases of this disease, whether antisepsis has been attempted by the administration of drugs or by various surgical procedures, such as ileostomy, with washing out of the bowel. There are records, however, of cases in which such a procedure, radical as it seems, has proved definitely valuable. A considerable number of cases have been reported in which splenectomy has seemed to be advantageous, but in those cases of pernicious anemia in which the spleen is of normal size, it apparently does not result in benefit of even a temporary nature.

If it be true that it is the bacillus Welchii and associated organisms which produce pernicious anemia by invading the upper intestinal tract, it may be that ileostomy has greater promise than appears at first sight, and if the organisms are of a fermentative type and non-proteolytic it may possibly be

correct to state that a change in the diet consisting of less carbohydrates and more proteins will be advantageous, a thought which is of the more importance because there has always been a tendency to administer red meat freely in cases of this character.

In connection with this point it must be recalled that one of the characteristics of pernicious anemia is a great decrease in, or a total absence of, hydrochloric acid in the gastric juice, and therefore, as many clinicians believe, if proteins are given, it is all the more important to aid their digestion by the administration of this acid.

It is to be regretted that all too frequently when studies such as these are carried out the authors do not go one step further and attempt to determine what drugs, or what diet, will possibly exercise a deleterious influence upon the particular organisms which seem to be responsible. It is of as great importance to determine what measures can be taken for relief as to determine what are the causes of the disease.

THE USE OF BARIUM CHLORIDE AS A CARDIAC DRUG.

It has been known to pharmacologists for many years that barium chloride is capable of exercising a powerful stimulating effect upon the heart muscle. Most of the evidence in support of this fact has arisen from a study of its influence on the lower animals, but there is enough additional evidence from its employment in human beings to support the views acquired from investigations in the laboratory. It has also been known that barium chloride is definitely poisonous if the dose is large, and it is said that the fatal dose varies from 3 to 15 grains. The doses which have been administered by the mouth to human beings with the idea of producing a therapeutic effect have usually been in the neighborhood of one-half to one grain three times a day.

Notwithstanding the fact that barium chloride possesses the physiological action that we have referred to, it has never met with general acceptance by the profession, at least to the extent that would lead to its general employment, but recently Cohn has reported three cases of Stokes-Adams disease which he thinks were very definitely benefited by the administration of this substance.

Curiously enough, digitalis, which has a physiological action practically identical with that of barium chloride, failed to produce good results when administered to these patients, and in at least one instance seemed to make the individual worse, whereas adrenalin injected subcutaneously, or even into the heart muscle, when cardiac arrest seemed to be existent, was satisfactory in that it restored cardiac action for a brief period.

It will be recalled that barium chloride stimulates the heart muscle to greater contractile power, seems to definitely increase the irritability of the ventricle, and that it also exercises marked effect upon blood-pressure by stimulating the muscular coats of the blood-vessels, all of which effects are closely related to those of digitalis.

It is interesting to note that while the medical profession in general has not apparently found barium a useful cardiac drug, veterinarians seem to hold it in some esteem to the extent at least that it can be considered a veterinary remedy used far more frequently than it is in human medicine.

It is well known, of course, that digitalis is a dangerous remedy in partial heart block, but may do much good in complete heart block by increasing ventricular irritability, or, in other words, the ability of the ventricle to initiate its own contractions. Possibly some of the evil results which have followed the employment of barium chloride as a cardiac drug have been due to its administration in too large doses. So far as our knowledge of its physiological action is concerned, there is little to indicate that it ought to succeed where digitalis fails, but after all bedside experience must be the determining factor in therapeutics, and Cohn's report is worth bearing in mind when the physician meets with a true case of heart block, since Cohn is so convinced of its value as to assert that in his opinion the drug should be given a trial when the physician is brought face

to face with this threatening and often fatal cardiac condition.

Martindale and Westcott give the dose as one-half to one and a half grains three times a day.

A WORD AS TO SLEEP-PRODUCING DRUGS.

Men of experience are well aware that human beings may be divided into several classes in regard to sleep. There is the sleeplessness characteristic of the acute infections; the sleeplessness which seems to be constitutional in that a person is subject to this unfortunate condition all the years of his life; and finally the sleeplessness of the individual who, because of anxiety. grief, or other similar cause, is unable to get the rest which is essential if he is to carry on.

Closely connected with those in the second category may be said to be those persons with an unstable nervous system who find it difficult to meet the exigencies of life and who seek the benumbing effects of drugs which act upon the higher centers of the nervous system.

The difference between this latter class and those who may be considered definitely degenerate is often a very slight one.

Because so many people turn to sleep as a means of blotting out trouble, at least for a short time, synthetic chemistry has provided us, and is continuing to provide us, with all sorts of modifications whereby drugs, most of which belong to the barbituric acid series, are produced. Without question many of these drugs are very valuable additions to therapeutics, but like all other remedies potent for good, there are certain conditions in which we believe that their action is not advantageous. Thus, in persons with Bright's disease or diabetes, and in those suffering from the acute infections, such, for example, as pneumonia, it has been our experience that the body is unable to destroy, or eliminate, such medicaments as promptly as is desirable, with the result that a condition of semistupefaction or absolute stupefaction develops, and if the physician does not recognize the fact that the drug is responsible, he may think that the mental state is indicative of a grave crisis in the malady from which his patient is suffering.

Of course it is the type of so-called "nervous insomnia" in which these drugs usually produce the best results, provided they are administered early enough in the evening to have their effects pass off by the next morning, but even in these patients their continued use after a time sometimes tends to cause a condition of mental fog or depression which forces their abandonment.

In this connection we think it of interest to note an article by Sir Maurice Craig contributed to the London *Practitioner* upon the "Treatment of Insomnia." He is apparently a strong advocate of this group of remedies, and, while recognizing that they should not be abused, he nevertheless asserts that to place them under the English Dangerous Drug Act would be an absurdity, as under these circumstances all sharp instruments, illuminating gas and razors might be so classed; in other words, he believes that the number of persons who die from taking an overdose is exceedingly small. He does not believe that these drugs if used for a long period of time produce pathological changes, asserting that from his experience of hundreds of persons, who have taken drugs belonging to the urea group for many months, with beneficial results and with no untoward symptoms, he has reached the conclusion that they are exceedingly innocuous, believing that they are less damaging than the bromides not only as to the digestion but as to the mentality. He says he has seen the mental state of many persons made worse by bromides, and that he has yet to see one rendered worse by barbital sodium.

We cannot help feeling that this statement is somewhat sweeping in view of what we have already said.

Again Sir Maurice expresses an opinion, which we have expressed in these pages on previous occasions, that the fear of drug addiction and its actual occurrence is far in excess of actuality. Excluding the number of degenerate persons who, to use his

words, start with alcohol and then turn to other drugs, he believes that the induction of a drug habit is very rare.

Our readers will recall that in the September and November issues of the GAZETTE we dealt with this matter of drug addiction, pointing out that many of the statements which are published in regard to the number of addicts are valueless because of their untruthfulness.

For the relief of the insomnia complicating acute illnesses, we are firmly convinced that morphine as yet has no competitor. It is true that there are a few people who are depressed or nauseated after its use, but nevertheless if we compare the instances in which it is most satisfactory with those in which it fails, we will find that it is a notable life-saver in a large majority of cases.

A fact which is not unworthy of attention is that before the newer sleep producers were introduced, it was generally considered that chloral was the purest hypnotic or somnifacient in existence, and after a large experience we are inclined to believe that it still has a right to make a claim in this direction. The fact that confirmed alcoholics do not seem to stand the drug well has aided in disseminating a feeling amongst the profession that chloral is a powerful cardiac depressant, with the result that it has been put aside, or that inadequate doses have been used, such as 5 or 10 grains, when 15 or 20 should have been employed, and we have seen cases in which as much as 40 grains were repeatedly taken with entire impunity and with excellent results.

Last of all, there can be no question that no sleep-producing drug should be taken *ad libitum*, and that one of the functions of the physician is to determine the drug which is best suited to an individual case, and also to determine how long that particular drug should be administered. Furthermore, by virtue of his skill, he should, if possible, determine the cause of the sleeplessness and the type of the patient in which it exists, and so reach a correct conclusion as to the safest remedy which can be employed.

VENEREAL PROPHYLAXIS.

Theoretically venereal diseases — *i. e.*, syphilis, gonorrhea, and chancroid — are completely under control. They may be avoided, in the main, but not entirely, by shunning venereal contact. Even though contact be made they may still be avoided by thorough local cleanliness, supplemented by chemical agents.

Among certain groups favorably located for this purpose and under complete psychic or medical and physical control venereal diseases are entirely avoided; rarely by the agencies just mentioned, unless supplemented, if the group be men, by rendering difficult or impossible of access women of lax morality.

When the American troops were sent abroad apprehension was felt and expressed as to the wreckage of their moral standards and of their physical health by the lure of the daughters of France. Under the careful supervision of the officers, particularly those of the Medical Corps, these apprehensions were not largely realized. During the period of strenuous training the venereal rate, as contrasted with that which might have been expected and with that obtaining in the civilian population, remained extraordinarily low. During the subsequent period of inaction this low rate was not maintained.

The low rate in front-line troops was attributable in the main not to admonition, supervision and sequestration of sources of infection when found, and the use of preventive measures before and after exposure, but to lack of opportunity for exposure.

The question as to the value of prophylaxis by chemicals as applied to thousands of young men quartered in a populous area remains an open one in so far as its complete efficiency in controlling venereal infections is concerned.

The history of the past gives no reason for believing that moral considerations will restrain all, or even the majority, of lusty young men when gathered together in camps. In this relation it is interesting to note that Keefer (*The Military Surgeon*,

September, 1925), reporting on the health situation of the American troops in Coblenz for the last few years, harks back to the Napoleonic occupation of the entire western bank of the Rhine in the early part of the last century. Venereal diseases became so prevalent and devastating among the French troops that the Prefect, to show his eagerness to coöperate with the conquerors, issued an order for the arrest and control of prostitutes, which still remains a state ordinance. By it all bawdy houses were taxed, were required to report in writing the names of all inmates, and were prohibited from conducting cabarets. Prostitutes were not allowed to appear in the street during the hours of daylight, nor to call or signal from windows, nor to appear about the military confines, or near schools or other establishments where youth would be congregated. Not more than two prostitutes were allowed to walk or talk together in the public streets. Each woman was required to notify officials immediately upon any sign of illness. A special surgeon was assigned to examine these women weekly; those found diseased were at once arrested, sequestered and treated. Each prostitute was required to pay ten francs twice a year for a health certificate and 75 centimes for each inspection, this money being used for the treatment of women venereally infected and for the transportation of those expelled from the area.

As one of the results of these orders Keefer states that country women came to town to be registered as prostitutes, and no girls asked to be returned to lives of good morals. The venereal disease rate, however, gradually decreased.

As to the American occupation of 1918-1922 Keefer states that about 50 per cent of the cases on sick report were venereally infected. About 2 per cent of the entire command contracted itch. The venereal incidence was at first low, to-wit, 21.6 per thousand, this during the period when veterans constituted the occupying force, when fraternizing was forbidden, and the men were told that those who acquired venereal disease would not be permitted to return home until cured. The seasoned troops of the first occupation were replaced by recruits, and the latter were not forbidden to fraternize. Venereal incidence then rose rapidly, so that shortly it increased to the weekly rate of 356, thereafter slowly subsided to 100 per 1000, and maintained about this level.

An underlying reason for the high rate, as given by Keefer, was the depreciated mark, which made the American soldier for the time being a comparatively rich man, for whom there was available and accessible an abundance of alcoholic intoxicants. Further factors of import were the inexperience of recruits and in particular the large number of women who came to Coblenz attracted there by what seemed money in abundance and easily obtained.

Among the suppressive measures taken were the establishment of vagrancy courts before which were brought women without passes, those soliciting and those reported by soldiers who had contracted disease. If diseased they were hospitalized and treated. If not diseased they were turned over to the German authorities for restraint and reclamation. Non-residents were deported, or if guilty of a second offence were jailed. Three thousand five hundred and eighty-four women were tried for vagrancy in 1920. Of this number 994 were venereally infected.

Diseased women were sent to a lock hospital operated by a German staff. Moreover a lock hospital was established for officers and enlisted men, administered under rigid discipline and with those confined therein kept actively engaged in military duties.

There was a weekly venereal inspection of troops. Spirits were forbidden. Light wine and beer were allowed from 12 to 1 in the day and from 5 to 9:30. Night passes were issued only to good conduct men. Prophylactic packages were issued to all applicants. Soldiers returning from out-on-pass if showing signs of intoxication were given prophylactic treatment. Furlough men on return were given a physical examination. Keefer believes that it might have been serviceable to require every soldier to carry

always a prophylactic package. When this order was about to be issued the troops were recalled. There are many who oppose measures taken to prevent venereal disease on the ground that if such measures be officially recognized and enforced, men are led to believe that exposure is officially countenanced, and that such exposure may be insured against the subsequent development of disease. Therefore that sexual immorality is encouraged, and because of the increased number who take the risk there will be many who are careless or forgetful of measures of disinfection. Hence among a large body of men the total number incapacitated by venereal infections may be as great, if not greater, than had prophylaxis not been taught and practiced. The complete efficacy of mechanical and chemical prophylaxis cannot be doubted. As practiced by the young men of the present day who constitute the rank and file of the army its results are not convincing. Still less is this measure of prevention likely to be largely effective in the civilian population. Theoretically it is almost perfect, practically of avail, but not so largely so as was hoped.

The varying incidence of venereal infections in the various commands is due in part to the varying interest taken in the matter by the various medical officers, but mainly to the varying accessibility and availability of loose women.

UTERINE CANCER.

With the progress of time, and the realization of the fact that the value of any treatment designed for the cure of cancer must be assessed on the basis of at least a five-year follow-up, it might seem that the best method of treating malignant disease of the uterus would have been so well formulated that the individual practitioner to whom these cases present themselves could without hesitation relegate them either to the roentgenologist, the radiologist, or the surgeon. To a limited extent this is true since when the disease has reached such proportions as to extensively involve surrounding organs, the bladder and rectum for instance, or has become firmly fixed in the pelvis, it is properly classed as inoperable, and if sent for radium treatment will usually benefit in so far as symptoms are concerned; exceptionally will be cured to at least the five-year limit.

Cases of cancer of the cervix in which the disease is confined to this region, and cancer of the body of the uterus which has not extended beyond this organ excepting toward the cervix or vagina, are still claimed by both the physicist and the surgeon, each holding that his results are the most assured and the most lasting. The difference of opinion is well exemplified by a series of papers appearing in the *British Medical Journal* of August 15, 1925, the first by Watson, who points out that in America in 1915 about one-fourth of all the cancer deaths in women, to-wit, nearly 12,000, were from cancer of the pelvic organs. He notes that cancer of the cervix is ten times as common as that of the body of the uterus and is essentially a disease of parous women, Frankl being quoted to the effect that 97 per cent of all cancers of the cervix occur in women who have borne children. The inference from this is fairly plain, to-wit, that incident to bearing children there is a cervical laceration which if unhealed results in a chronically ulcerated and inflamed region, and this constitutes a focus for the implantation and development of cancer. The prophylactic lesson is obvious, *i.e.*, the avoidance of cervical tear by unnecessary manipulations, the immediate cure by operation when they occur. This would be a direct blow to the one-time common and still occasionally flourishing tampon gynecologist. It is worthy of note that women, and by the thousands, will suffer from a purulent discharge incident to a lacerated and eroded cervix and without consulting a physician, who were such a lesion in another part of the body would seek medical aid at once.

As is true of malignant infiltration in all parts of the body, a favorable prognosis is dependent upon early diagnosis and prompt removal or destruction. The early diagnostic sign of cancer of either the cervix or the

body of the uterus is abnormal bleeding; or it may be a change in the character of the existing leucorrheal discharge. Such symptoms always call for an adequate examination, nor can one made casually with the gloved finger be considered adequate if nothing be thus found. Under such circumstances, and in the presence of abnormal bleeding, there must be an exploration of the uterus. This may show a cancer within the cervical canal inaccessible to the examining finger. It may show that the uterine body is involved. Watson urges that such an examination with removal of tissue for microscopic examination should be followed, if corroborative of the presence of cancer, by immediate operation. He further holds that it is useless to educate the public as to the value of an early examination in cases of irregular vaginal bleeding unless the profession clearly understands the method of making a complete examination and habitually practices it.

Bearing on age incidence cervical cancer is commonest from the fortieth to the fifty-fifth year. Norris and Vogt found that 86.9 per cent were 41 years or over. The disease may occur in young people. Schmitz noted that nearly 12 per cent of his cases occurred before the thirty-sixth year.

Cancer of the body of the uterus occurs at a later age; some years after the menopause, which on an average registers its completion at or about the fiftieth year. Cancer of the body is commoner in the nulliparous than is cancer of the cervix.

As to the prospects for a permanent cure Watson states that by any surgical procedure, when the disease is actually confined to the cervix, the ultimate results are very much better than 25 per cent permanent cure. He quotes Heyman of the Radium Institute of Stockholm, who in a series of 505 cases had a little short of 30 per cent of five-year cures.

Bonney, dealing with the same subject, expresses himself as a firm believer in Wertheim's operation, carried out to its fullest extent and with minute attention to details. He has performed this about 300 times and reports on his first 192 cases, the last of which was operated on in July, 1920. He explains his operability rate as 63 per cent, which is high. This rate is calculated from the total number of cases of carcinoma of the cervix presenting themselves at a particular hospital or clinic with the total number of radical operations performed over the same period. Incident to high operability rate it is obvious that the disease in many patients was well advanced. This is further shown by the fact that in not less than 40 per cent the removed regional glands proved to be carcinomatous. This is contrasted with Leitch's post-mortem investigations on over 900 cadavers, showing that in only 35 per cent dying of the disease unoperated upon were the regional glands carcinomatous. Bonney operated on every patient in whom there appeared the slightest chance of being able to remove the growth, and among them were cases that had been sent away as inoperable from institutions of repute. The only bars to the accomplishment of the operation were an extensive involvement of the bladder or bowel, or both ureters to the extent of producing bilateral hydroureter. He considers involvement of the bladder must first be excluded, and notes that when this occurs the patient always presents urinary symptoms such as frequency and pain. In the absence of these symptoms one can rest assured there is no deep involvement of the bladder. Moreover extension to the bladder shortens the anterior vaginal wall; and finally, in case of doubt, a cystoscope may be used. One hundred and ninety-two cases he was able to trace. Of these 16 per cent died as the result of operation, 70 of recurrent growth; 5 of other diseases, 7 were lost sight of, and 78 were well after five years. Recurrences when they occur are mostly in the side or the bony wall of the pelvis or lower vertebræ, the first sign of involvement being pain in one or other of the legs. Bonney removes the vagina, since this is one of the two lines of extension, hence there can be no recurrence here. The likelihood of recurrence is greatest in the first two years and progressively diminishes from then onwards. Even five years of freedom must not be consid-

ered as an absolute cure, as about 3 per cent will recur after that. If one considers only those cases which recover from operation, Bonney has cured 49 per cent of 160 patients who recovered from operation. Of 60 patients with carcinomatous glands who recovered from operation 33 per cent were well five years afterward, whilst of 100 patients whose glands were not carcinomatous and who recovered from operation 58 per cent were well five years afterward.

Bonney objects to both preoperative and postoperative radiation. The former he regards as making the operation more difficult and of no service. Bearing on cancer of the body of the uterus, as regards recurrence, he holds that at least 50 per cent of his cases recovering from operation are free from recurrence five years afterward. He notes that the most favorable group of cases are those in which the malignant growth is associated with fibroids.

In the discussion following this paper it is obvious that this meeting of the Section on Obstetrics and Gynecology of the British Medical Association was not attended by those enthusiastic radium and *x*-ray men who reported such excellent results in the use of their agents. There was a general acceptance of the conclusions reached by Bonney and by Watson, and even occasional advocacy of more radical surgery, since it was proposed to perform a panhysterectomy for those cases of cervical laceration and erosion which persisted unduly, in the belief that, being precancerous, malignant degeneration might be prevented by removing its possible seat. It would seem to the average practitioner that repair might be equally efficacious, and a simpler procedure.

Progress in Therapeutics

Medical Therapeutics

The Non-surgical Management of Peptic Ulcer by the Physiologic Rest Method.

In the *Journal of the American Medical Association* of August 29, 1925, SMITHIES states that the general care and the dietetic management are as follows:

Days 1 to 7 (time varies according to ulcer location, type, and visceral irritation): The patient begins treatment as a bed patient.

Feeding: By mouth, one-half ounce (15 cc) of warm water hourly when awake. Patient chews paraffin wax for fifteen minutes at least once in two hours. Juice of sweet orange or grapefruit occasionally.

By rectum, nutrient enema consisting of 50-per-cent alcohol, 1 ounce; glucose syrup, 1 ounce; and physiological sodium chloride solution, 6 ounces, every four hours. The enemas are preceded by a cleansing irrigation of the colon with physiological sodium chloride solution. They are given at body temperature by the drop method at the rate of from 30 to 60 drops a minute. During the first two days, tincture of opium, 10 minims (0.6 cc), may be added if pain and spasm are severe.

Days 3 to 14 (case of average severity): By mouth, from 4 to 6 ounces (120 to 180 cc) of water gruel at a temperature of 100° F. The gruel is taken slowly through a glass tube. Gruels are made from rice, cream of wheat, oatmeal, sago, corn-meal, cauliflower, beans, peas, and boiled onion. They are strained before feeding. Flavoring with coffee, chocolate, vanilla, caramel, etc., renders the cereal gruels palatable and their administration easier. To the vegetable gruels, small quantities of arrowroot or corn-starch are added to secure a thin emulsion.

Before each feeding, paraffin wax is chewed for five minutes. Warm water or sweet orange or grapefruit juice is allowed as desired, but never taken in greater quantity than one ounce (30 cc) at a time.

By rectum, during the first two days of mouth feeding, two alcohol-glucose-saline nutrient enemas are given. During the second two days, one such nutrient enema is administered. After the fourth day of mouth feeding no rectal feedings are given in the average case.

Days 14 to 21, 6:30 A.M.: A glass of hot water and 1 teaspoonful of non-effervescent sodium phosphate.

7:30 A.M.: One ounce of sweet orange or grapefruit juice, 2 ounces (60 cc) of thin cream of wheat, or farina, or well-cooked rice, or corn-meal; 2 ounces of skimmed, parboiled milk may be taken with cereal, and if desired a small quantity of powdered sugar used; one zwieback with a thin layer of fresh butter, 4 ounces of parboiled, skimmed milk, containing half volume of lime-water, served warm and flavored with coffee, cocoa, caramel, or vanilla.

9:30 A.M.: Six ounces (180 cc) of thin water gruel from cereals or fresh vegetables, strained and served hot; one rusk or zwieback, or dry toast.

11:30 A.M.: Four ounces of malted milk, whipped egg, with parboiled milk, corn-starch pudding, simple custard lightly cooked.

12:30 P.M.: Six ounces of potato, pea, bean, or asparagus purée (strained), or vegetable broth; 4 ounces of Salisbury steak (moderately well cooked) to chew; 2 ounces (60 gm., cooked weight) of thin rice, sago, tapioca, or corn-starch pudding made with parboiled milk and egg yolk (2 ounces of parboiled milk and a small quantity of pulverized sugar may be eaten with the pudding); one rusk or zwieback, 6 ounces of parboiled milk, and quarter volume of lime-water flavored to taste.

4 P.M.: Four ounces of water gruel from cereals, one very soft, poached egg, one rusk or zwieback, 4 ounces of hot Vichy water.

6 P.M.: Four ounces of whipped egg, two rusks or zwieback, 6 ounces of malted milk (thin), flavored to taste, or cereal water gruel or parboiled milk and quarter volume of lime-water gruel.

9 P.M.: Six ounces of water cereal gruel or 4 ounces of malt marrow; two graham crackers.

Days 21 to 42, 6:30 A.M.: Two teaspoonfuls of sodium phosphate in a glass of hot water.

8 A.M.: Juice of one sweet orange or half sweet grapefruit, or boiled prunes passed through fine colander; 2 ounces (cooked weight) of thin cereals (cream of wheat, farina, oatmeal, corn-meal); 2 ounces of skimmed milk and a small amount of powdered sugar; one soft poached egg; either two zwieback, two rusks, or two thin slices of well-toasted graham bread; 1 pint of hot skimmed milk plus a quarter volume of lime-water flavored to taste with cocoa, vanilla, etc.

10 A.M.: One pint of hot parboiled whole milk and fifth volume of lime-water; two rusks or graham crackers.

12:30 P.M.: Four ounces of creamed soup from vegetables, strained; 6 ounces of rare meat to chew; 4 ounces of well-mashed potato or baked potato (mealy inside), or carrot, peas, beans, cauliflower, brussels sprouts, or asparagus (all vegetables passed through a strainer and served with 15 gm. of butter); 4 ounces (cooked weight) of pudding from rice, corn-starch, sago, tapioca, cream of wheat or farina; or 4 ounces of custard, pulp of sweet orange, grapefruit or prune whip, or chew 6 ounces of watermelon or cantaloup; half-pint of hot skimmed milk.

3:30 P.M.: One hundred and fifty cubic centimeters of hot whole milk and quarter volume of lime-water, or 150 cc of malted milk or weak cocoa.

6:30 P.M.: Two rusks or zwieback or two slices of well-toasted graham bread; two very soft poached eggs; 100 gm. of sweet apple sauce or one baked apple (omit skins), or juice of sweet orange or half of grapefruit, or chew 6 ounces of melon; 1 pint of skimmed milk, hot.

9 P.M.: Two hundred and fifty cubic centimeters of whole parboiled milk and quarter volume of lime-water, or 250 cc of malted milk, hot.

General Diet for Three Months. — If distress occurs, the patient should go back to seven to twenty-one day diet.

7 A.M.: One pint of skimmed milk and half a gill of cream.

9 A.M.: Two pieces of toast without butter; juice of one sweet orange or grapefruit or ripe melon or apple sauce or baked apple (do not eat skin) or marmalade; one dish of well-cooked cereal (oatmeal, farina, or cream of wheat); two very soft poached eggs; 2 cups of hot, sweetened water. The water may be made more palatable by flavoring with cocoa, tea, coffee, or cream.

11 A.M.: One cup of bouillon (two cubes); two graham crackers.

1 P.M.: This should be the heavy meal of the day. It may consist of meat (rare beef, rare hamburger steak, lamb, or white meat of fowl), fish (never fried), oysters, well-cooked spinach, cauliflower, carrots, squash, peas (hulled), string-beans, brussels sprouts, baked or mashed potatoes (in moderation), rice with gravy, simple puddings made from cereals, corn-starch, gelatin, well-cooked fruit sauces, simple cakes, no white bread (all bread should be made from dark flour and should be at least one day old); 1 pint of skimmed milk taken hot.

4 P.M.: One glass of hot peppermint water (20 drops of "essence" of peppermint to the glass), sweeten to taste and drink slowly; two graham crackers.

7 P.M.: A light lunch consisting of vegetable soup, simple salad, toast, soft eggs, and plain puddings or cake, with or without ripe cooked fruit sauces; 1 pint of hot skimmed milk.

Bedtime, one glass of malt marrow, malted milk or hot skimmed milk.

Medical Management. — This consists chiefly in the exhibition of antispasmodics (atropine, tincture of belladonna, bromides) to control hyperperistalsis, orificial spasm, pain, or nervous unrest. The average patient receives neither alkalies nor lavage.

Apart from the recording of number of ulcer cures, the type of treatment which he suggests can claim to itself certain advantages, simply as a method:

(*a*) It brings peptic ulcer management into line with modern investigations in alimentary tract physiology and pathology.

(*b*) It seeks to recognize and eliminate or to alleviate the causative agents or conditions leading to the production and the continuance of ulcer.

(*c*) It permits handling of patients along reasonable lines and not according to set formulas, irrespective of the particular problem at hand.

(*d*) It is practical and safe, is easily instituted, and is carried out with minimum effort in the home as well as in the hospital, without specially trained help and with little expense.

(*e*) It practically abolishes the necessity for frequent and prolonged use of the stomach tube—an advantage quickly appreciated by patients, nurses, and physicians.

(*f*) If employed in institutions, the method saves much time for interns and nurses, since they are relieved of much routine, so characteristic of many ulcer regimens in vogue.

(*g*) It calls for the exhibition of but little medicine; particularly does it do away with the long-continued use of disagreeable and expensive alkaline remedies.

(*h*) It removes from a class of patients the dangers possible from "continued alkalization" alkalosis—a real danger, as the work of McVicar at the Mayo Clinic has shown.

(*i*) It permits, at all times, an accurate appraisal of the patient's true condition; one is not misled by false symptoms and signs due to the digestive anomalies caused by unphysiologic feedings, excess of medicine and effects of tubing and lavage. The patient is always in a condition in which motor test meals, fluoroscopic observations and stool blood tests can accurately be carried out.

(*j*) When the patient is affected with ulcer involving the cardia or the proximal fourth of the stomach, he is not exposed

to tube trauma or to ulcer irritation by tubings which may (as in a number of cases under his care after other treatment had previously been given) rapidly carry forward ulcers to malignancy, severe hemorrhage, or even perforation.

(*k*) It is particularly adaptable to the handling of those patients on whom gastric operations have been performed and in whose stomachs ulcers recur or gastrojejunal ulcers develop. In this type of patient, gastric lavage rarely empties the dilated jejunal loops of poorly digested, stagnant food; in such circumstances alkalies are of great annoyance, since when administered they pass rapidly from the stomach.

(*l*) Finally, by instituting the regimen only in selected groups of proved ulcers, and by not attempting its employment in unsuited instances in a wholly haphazard way (as has been the custom heretofore with non-surgical regimens), prognosis is brighter: the patient enters on a course of therapy not with the attitude that the non-surgical method is a sort of experiment to be tried (at great cost of time and money) as a preliminary to surgical treatment, but in a coöperative, optimistic spirit, highly conducive to the best results.

The Treatment of Malaria by Novarsenobillon.

In the *Proceedings of the Royal Society of Medicine* for August, 1925, WHITTINGHAM states that there are several general points in favor of intravenous medication with novarsenobillon in malaria:

1. The patient has no opportunity of evading the administration of the drug.

2. The exact dosage is known.

3. The maximum amount of the drug comes in contact with the blood parasites in the shortest interval of time. By this means the dose can be accurately adjusted, so as not to damage the tissues of man.

4. Treatment is given weekly, fortnightly, or every third week, instead of daily as is the case with quinine. This procedure renders the treatment less tedious to all concerned.

5. The drug can be given at the height of the fever—the time when the parasites are most vulnerable. With oral administration of quinine it is necessary to wait until the fever has abated before giving the drug, as its absorption by the congested gastric and duodenal mucosa is delayed during the pyrexia.

6. The drug can be administered to patients suffering from vomiting or unconsciousness.

7. The pain caused by the venipuncture is trifling; and the danger of abscess formation and discomfort due to tension, which are liable to follow subcutaneous or intramuscular injections of quinine, is reduced to a minimum.

8. Other diseases, such as relapsing fever, blackwater fever, syphilis, veldt sore, Vincent's disease, yaws and frambesia, any of which may complicate malaria, can be treated by this drug.

It is only fair to state that there are some recognized disadvantages attaching to the intravenous medication with novarsenobillon. For example, those suffering from cardiac or renal disease are excluded from undergoing its administration. It must also be remembered that a certain amount of skill and experience is required to master the technique of intravenous therapy.

There remains to be considered the treatment of malaria from the standpoint of administration. It is obvious that the control of the treatment will lie in the hands of either the doctor or the patient. In the case of giving quinine by the mouth, this control is left chiefly to the patient. No matter how honest the man may be, he is apt to be forgetful at times. As Fletcher has remarked, "Quinine resistance lies, not in the parasite but in the patient." On the contrary, the novarsenobillon treatment is entirely in the hands of the doctor, who gets a firm hold of the cases. This hold is of the greatest importance to both people concerned. The doctor knows what treatment has been received and can watch the progress of the case, and there is with this mode of treat-

ment a more beneficial psychical effect on the patient.

It is not stating the case too forcibly to say that, in the treatment of benign tertian malaria, novarsenobillon compares very favorably with quinine. The drug is not recommended in the treatment of malaria to the exclusion of quinine, but should be used in conjunction with it to insure that the patient receives enough treatment to prevent a relapse. The two drugs act on the human body in a somewhat different manner, and at times the one is not well tolerated, at times the other. A combined therapy offers a greater scope of usefulness, for one drug will save the use of too large a dose of the other. The position is perhaps better illustrated by analogy. Organic arsenic compounds have been found to be of the utmost value in the treatment of syphilis; yet mercury has not been replaced by them. To carry the analogy further, the improvement in the antisyphilitic treatment since the widespread introduction of injections is possibly not due to any superiority of the new drug over the old, but rather to the fact that the drug has been actually given, and not avoided.

[Neoarsphenamine can, of course, be used instead of novarsenobillon.—ED.]

The Unknown Facts of Gout.

In the *Proceedings of the Royal Society of Medicine* for August, 1925, JEROME states that gout, as we are aware, is at present believed to be due to an infection, arising probably in the alimentary canal. During an infection some cells are liable to succumb to the action of the virus, whilst others are less seriously affected.

The nuclein derived from the first of these he supposes to yield abnormal (gelatinous) uric acid, and that from the other cells normal crystalline uric acid.

The crystalline is then gradually, and more or less continuously, excreted by the kidneys; while the gelatinous for a time (three or four days) is retained within the circulation.

This period of retention coincides with that which precedes or accompanies the onset of an acute attack of gout when the renal excretion of uric acid is apt to be subnormal.

On the other hand, the anions of the gelatinous acid, by virtue of their colloidal nature, form aggregates too large to pass through the kidney cells; such aggregates may even contain some undissociated molecules, and they have been named by McBain "micelles ioniques." The bond, however, which unites these aggregates, not being that of true molecular combination, but only a lax physical association, is easily loosened in the presence of a multiplicity of sodium kations such as exist in cartilage and other sodium-rich tissues.

As the capillaries of these tissues have a fairly high degree of permeability, they offer little resistance to the passage of the uric anions through them; the many sodium kations present serving to dissociate the aggregates and to attract their constituent ions.

In the lymph the uric and sodium ions combine chemically, forming sodium biurate. This, in consequence of the high sodium concentration, is more or less precipitated. But as the act of precipitation, by the removal of sodium, lowers the sodium concentration, the precipitate undergoes partial solution, the dissolved part, after absorption, being carried to the kidneys for excretion, and the undissolved portion remaining, possibly to form the nucleus of a tophus, or to be absorbed later, as a tophus sometimes is absorbed. It is the simultaneous elimination of this sodium biurate, coming from the gelatinous uric acid, with some of that of the crystalline acid, which makes the renal uric excretion abnormally high at the acme of a gouty paroxysm.

As the lymph of the sodium-rich tissues, though containing a high sodium percentage, is at the same time a balanced saline solution containing, in addition to its other constituents, sodium, potassium and calcium kations, in conformity with Ringer's law, the removal (by precipitation) of sodium makes all the kations, thereby un-

balanced, toxic. The toxic ions, then, through alteration of the permeability of the cells, and entry of the ions, excite pathological reaction, in the form sometimes of Ebstein's necrosis, and at others of that of a milder type of inflammation.

The above scheme will be found to explain the puzzles presented, *e.g.*:

(*a*) Uratosis occurs because some of the uric acid, being of the gelatinous type, and therefore incapable of passing through the kidneys, permeates the capillaries of the sodium-rich tissues and forms in their lymph a precipitate of sodium biurate, which, because of the high sodium concentration, admits of only partial solution.

(*b*) Uratosis takes place in gout and not in leukemia, because some of the uric acid is of the gelatinous type in the first of these diseases and not in the second.

(*c*) There is no parallelism between hyperuricemia and uratosis, because the first of these depends on the amount, and the second on the type of the uric acid.

(*d*) The renal excretion of uric acid during an acute attack of gout is at first below par, and then excessive in amount, because the gelatinous acid is first retained in the circulation through its inability to traverse the kidneys, and later in the form of sodium biurate is partially eliminated, simultaneously with some of the normal crystalline acid.

(*e*) Ebstein's necrosis occurs when there is a sufficiently high concentration of kations made toxic through an infraction of Ringer's law, in cartilage or other of the sodium-rich tissues.

It may now be asked whether gout is the only disease in which gelatinous uric acid is formed. Uratosis is common in chronic alcoholism, and in lead poisoning; and its mode of production in these cases may be presumed to be the same as in gout. There is, however, a great difference in the nature of a bacterial toxin, of alcohol, and of lead. And he draws attention to the possibility that an early effect of each of these poisons, by deranging the functions of the alimentary canal, may be to beget a gastrointestinal poison similar, if not identical, in the three cases. It is also possible that two of the poisons under consideration may simultaneously modify the nuclein catabolism.

In connection with the law of saline equilibrium he mentions the names of Ringer and of Loeb, and he emphasizes the fact that, of these, Ringer was the acknowledged pioneer. He mentions this because though Ringer's expertness as a clinician was fully appreciated during his lifetime, it seems that his scientific reputation has come to be associated more with his physiological saline solution than with his discovery of a fundamental law of nature—this latter being a high distinction, and one which falls to the lot of relatively few.

Some Dogmatic Statements Concerning Treatment of Neurosyphilis.

In the *Boston Medical and Surgical Journal* of August 27, 1925, SOLOMON states that examination of the cerebrospinal fluid in every case of syphilis is the first step in dealing with the problem of neurosyphilis.

The central nervous system is usually invaded by spirochetes in the period of generalization.

The spinal fluid findings give some indication of the way in which the case will respond to treatment.

There is no close relationship between the blood Wassermann reaction and the cerebrospinal fluid findings.

Cases of neurosyphilis react very differently to treatment.

In a general way it may be stated that meningeal syphilis reacts most favorably to treatment; tabetic neurosyphilis a little less favorably; and the paretic type is the most difficult to handle satisfactorily. It is difficult to evaluate the results of treatment in vascular neurosyphilis.

For the treatment of neurosyphilis the following drugs and methods are valuable: Intravenous and intramuscular administration of arsphenamine and its derivatives; intraspinal, intracisternal, and intraventricular injections of serum; tryparsamide; and febrile-producing diseases, as malaria

and relapsing fever. The iodides, mercury and bismuth are adjuvants to any of these methods. As previously suggested, arsphenamine may react very satisfactorily in almost any form of neurosyphilis. In order to get the best results with this drug in the treatment of neurosyphilis, it is often necessary to use it in frequently repeated doses, that is, twice or three times a week over a period of a good many months. Until this has been done it has not been demonstrated that the drug will not give a satisfactory result. However, experience has taught us that many times it is ineffectual. In a fair number of cases in which arsphenamine does not give a satisfactory therapeutic result, intraspinal, intracisternal, or intraventricular injections may produce something more satisfactory. It is therefore possible to set down the following suggestions that may be used in cases of neurosyphilis where one is not greatly pressed for immediate results on account of the patient's condition:

Treatment by the injection of arsphenamine is given frequently for a matter of several months as a test for the patient's response to this treatment. His response to treatment can be checked by the clinical course and the spinal fluid findings. With the exception of cases of very mild meningeal neurosyphilis, it is not to be expected that spinal fluid changes will begin to occur for at least three months, and in many cases it takes six months to a year or more before this really becomes sufficiently marked to be considered definite. If neither the clinical nor serological improvement is sufficient to prove that the treatment has been thoroughly successful, one may then proceed to the use of intraspinal or intracisternal treatments, which, again, must be given a number of times before one has any reason to expect results.

In the cases in which satisfactory results are not obtained by the use of intravenous arsphenamine or intraspinal and intracisternal injections, one may be more successful by resorting to injections of serum directly into the cerebral ventricles. In cases of paretic neurosyphilis in which experience has taught us that the milder treatments are only infrequently successful, one should resort to a combination of these methods, namely, intravenous arsphenamine, intraspinal, intracisternal, and intraventricular injections, if one is to rely on arsphenamine and arsphenaminized serum. It is possible to give the injections, both intravenous and intracisternal or intraventricular, at intervals as frequently as twice a week. In most cases of paretic neurosyphilis this radical type of treatment is required.

Tryparsamide seems to have more effect in many cases of paretic neurosyphilis than does arsphenamine, and it appears that it is often possible to get better results by the use of this drug than can be obtained by the combination of arsphenamine and the serum injections. Tryparsamide is still relatively new, and it is not possible therefore to speak with too much certainty as to what it will do. However, the general consensus of opinion, as gleaned from the literature, as well as personal experience, indicates that this drug is especially valuable in the treatment of cases of paretic neurosyphilis, where it is so difficult to obtain results with arsphenamine. It is also valuable in the treatment of other types of neurosyphilis. Certainly, serological and clinical improvement have been obtained in a large number of patients. It is not possible at the present time to insist upon the final value.

In order to get the best results with tryparsamide, it is necessary to continue the injections for a long period. While clinical results are often obtained within a few weeks, it is sometimes necessary to use the drug over a period of two or more years to get the most satisfactory serological results.

Tryparsamide apparently is most effective when used in combination with arsphenamine and mercury. It is also possible to use it in conjunction with serum injections given into the subarachnoid space or into the ventricles.

The best results in the treatment of neurosyphilis are to be obtained only if treatment is given frequently and persisted in long

enough and if one tries several methods or combinations. If one method does not produce the required results, another method should be substituted or combined. It is always necessary, however, to keep in mind the patient's nutrition, his general hygiene, and his reaction to the treatment. Treatment should never be pushed to the point where it is reducing the patient's vitality and, therefore, the possibility of producing a good bodily resistance.

The result of treatment should be checked by frequent examinations of the spinal fluid. Without such a method of check, one has not a satisfactory method of determining the value of the treatment. Clinical improvement may be only temporary and is very often misleading. It has been found that as a general rule, though not without exception, those cases in which there is no improvement in the spinal fluid are likely to relapse; whereas those cases in which spinal fluid improvement runs along coincidentally with clinical improvement are likely to be more permanent.

The non-specific treatment of neurosyphilis has been advocated for a number of years, the theory being that the febrile reaction would have some effect upon the invading organism or else raise the immunity of the host by some means. Since 1917 the treatment of neurosyphilis by malaria has been used. This was apparently first introduced by Wagner von Jauregg of Vienna. Several theories have been put forth to explain why it should have some beneficial effect, all being similar to those used to explain the value of non-specific protein therapy. The statement is offered that paretic and tabetic neurosyphilis cases are rare in malaria infested countries where syphilis is extremely frequent. In practice, malaria treatment has been used now quite widely throughout Europe and some extent in the United States. It consists in inoculating the patient with blood from another individual who has benign tertian malaria. The patient is permitted to have eight to twelve or more paroxysms and then treated with quinine. This is the full treatment. However, many investigators have added arsphenamine or tryparsamide subsequently. This treatment has been used chiefly in cases of paretic neurosyphilis, although it has likewise been used to some extent in other forms, as the tabetic and optic atrophy cases. A perusal of the literature shows that most of the investigators who have applied this form of therapy are quite optimistic, some claiming remissions in 70 per cent of the cases of the paretic form of neurosyphilis.

Relapsing fever has also been used for treatment of cases of neurosyphilis on the same theory as malaria. It has the advantage of having less severe effects on the patient and a lower mortality rate.

That something is accomplished by these methods seems certain. It is premature to draw definite conclusions. In his own limited experience he has seen some rather suggestive and interesting results of this type of treatment. It introduces a new method of treatment of disease, and is being applied abroad in the treatment of early syphilis as well as in the late neurosyphilitic forms.

The Malarial Treatment of General Paralysis.

In an editorial on this subject, the *Lancet* of August 22, 1925, states that the good effect of fever on psychoses has been known certainly for 2000 years, but it was not until 1887 that Wagner-Jauregg, of the University of Vienna, turned his attention to the possibility of curing paralysis by artificially induced fever. He tried and discarded several methods before he decided on the subcutaneous injection of tertian malaria blood; erysipelas, tuberculin, dead streptococci, and proteids were all exhaustively tested. Gerstmann gives a synoptic account of 400 cases (those of whom accurate after-histories had been kept) out of a total of 1000, and claims a very high percentage of complete recoveries — about 30 per cent—with a further 14 per cent of partial recoveries in which the patients regained a fair measure of social capacity.

The British psychiatrist will want to know how far the malaria treatment has

been tried in this country and with what outcome. It must be admitted that the results obtained here have been very disappointing. Gerstmann says as much himself in his chapter on the results obtained by other authors, and on turning over the recent reports from a number of our larger mental hospitals (some of which are noted in the same issue of the *Lancet*) we find that only a dozen or so have tried the treatment on a few patients, with results so meager as to be almost inconsiderable. Leicester reports that out of 23 patients 5 fully recovered, 3 were considerably improved, 3 died, and 12 were unaffected. At Chartham Downs one case has been discharged and several benefited, but the medical superintendent feels it is too early to express any definite opinion on the treatment. The one case treated at Barnwood is now free from any abnormal manifestations. Possible reasons for these scanty statistics are (1) this new unspecific treatment may be more likely to succeed in the clinic where it was invented and where everything possible is known about it than it is when adopted by strangers; (2) nowhere in Great Britain could anything like 1000 general paralytics come under treatment in the five years covered by Gerstmann's report; (3) British psychiatrists are still rather suspicious of a method so drastic and empirical and perhaps do not give it frequent trial.

A correspondent in the same number of the *Lancet* suggests a milder form of irritant — namely, colloidal sulphur — which might certainly be tried, although the opinion of the original investigators is that the malarial parasite has some specific action. The Viennese experts admit having selected the more promising subjects from their great mass of material during the last two years, and would certainly avoid cases that through age, duration of the paresis, or intolerance of fever would be unlikely to condemn a method that has only been tried here and there on batches of three or four patients taken at random. But whatever the reasons for the comparative failure in Britain, it would be a great pity if we allowed these results to deter us from testing the malarial treatment on a reasonably large scale. Desperate ills demand desperate remedies; there is very little danger in the treatment to patients of ordinary stamina, and so far no other means has been offered of countering one of the most distressing and hopeless illnesses of our age.

Observations with Ethylene.

In *Current Researches in Anesthesia and Analgesia* for June, 1925, ADAMS in summarizing his small series of cases reaches the following conclusions:

1. That ethylene is to be preferred to nitrous oxide in patients suffering from diabetes, pulmonary tuberculosis, and cardiac diseases from any cause.

2. That ethylene cannot be expected to displace ether as an anesthetic, but it will be used more and more as time goes on, in the place of ether, as it can be employed with greater satisfaction in all operations excepting those requiring deep relaxation.

3. He believes that any one who will give ethylene a fair trial will agree that it is here to stay, and while it is not the perfect anesthetic, still as time goes on it will become more and more a most useful and valuable adjunct to the armamentarium of the anesthetist.

Scopolamine-apomorphine Amnesia in Criminology.

In *Current Researches in Anesthesia and Analgesia* for June, 1925, HOUSE states that a process by which memory can be extracted, against the will, from an individual's subconscious mind is by injecting under the skin a sufficient amount of those drugs which tend to destroy temporarily all the functions of the brain except the activity of the center of hearing.

The technique which he now uses is as follows: To attempt to obviate excitement if possible, he gives first scopolamine gr. 1/100; in ten minutes more he administers scopolamine gr. 1/100; in another ten minutes he injects scopolamine gr. 1/200 plus

apomorphine gr. 1/40. Emesis rarely follows apomorphine gr. 1/40, but will with few exceptions follow gr. 1/30. This method is often too large a dosage for a person under eighteen years of age as it will likely produce convulsions, which, however, can be controlled with chloroform.

Twenty minutes later he runs the memory test by showing the individual some article every three minutes until four articles are shown. Then in five minutes he requests the names of the articles in the order shown. If they remember three of the four, unless their articulation is interfered with, he gives another injection of scopolamine gr. 1/200, or anesthetizes again with chloroform.

The next stage of the technique is to save all the scopolamine possible, and also to avoid giving large doses of scopolamine. To do this he contracts the synapses with chloroform.

For absolute perfection he carries the administration to complete surgical anesthesia, thereby destroying temporarily all the functions of the five senses as well as every other function of the upper brain, but not the centers of circulation and respiration.

When the discovery was made that the center of hearing could function normally while the other four centers were artificially asleep, this condition was named, by the advice of interested friends, the receptive stage or the examination stage. By observation he noted that the center of hearing would function from ten to thirty minutes before the next center could normally function, and by the administration of scopolamine gr. 1/200 every twenty to thirty minutes the receptive stage could be maintained for an indefinite period. The longest he has maintained this condition of the mind was when he held four murder suspects for four hours. He has held morphine addicts under the influence of hyoscine for two weeks, and, therefore, he would not hesitate to hold a criminal suspect in the examination stage as long as necessary.

In the examination stage the individual does not talk at random, but will reply to a direct question, and one will observe a condition of profound sleep or wakefulness without the ability to reason. This condition is called artificial unconsciousness. Individuals will answer all questions as the answer is stored in their mind, as pure memory. One can also note that the replies are given with childlike simplicity and with childlike honesty without evasiveness, guile, deceit, or fraud.

Notwithstanding what might be said to the contrary, House wishes to emphatically state that with clinical doses there is no harm in the use of scopolamine. Mental aberrations are only an evidence of small doses. The drug is a heart stimulant, and there are no dangerous after-effects.

In this work one obtains wrong answers if insufficient amounts of the drugs are given; or if the center of hearing is too deeply anesthetized to function normally; or when by asking too many questions the brain becomes tired. Any physician can readily understand the strain such work must entail upon the depressed brain. Questions asked in too loud a voice are liable to bring on convulsions, and it is not uncommon to note muscular tremors run the entire length of the body after a question. So powerful is the center of hearing that overstimulation can produce instant death, and that is why aviators must protect their ear-drums. All questions must be short and plain; long questions must be subdivided. Quite often it follows that he asks a question and notes wrong answers by the twitching of the face and the slowness of the replies, yet by changing the wording of a question, immediately receives a convincing reply.

Every time one asks a question he will receive some kind of a reply, for all of the answers are automatic, and the answer will be in accordance with understanding. Forgetfulness is a characteristic effect of the drug, and with long questions they will forget the first part of the question and will only answer the last part of it. Wrong answers only mean that the impulse was directed to wrong channels because the receptive stage had not fully arrived or the question was not presented in a form to be easily understood.

Experience will teach any one how to note wrong answers. It will also teach one to

build up evidence by piecing together short replies. Any reply that does not come quickly should not be accepted. The brain may be compared to a telephone system, the receivers the ear-drums, the wires the nerves, the switch-board the brain, and the operator the soul or life. Scopolamine intoxicates the operator, and if such an operator plugs a wrong number, it would not mean the telephone exchange was not built right. Hence wrong answers only mean the suspect has not reached the examination stage, or has passed unsuspected through the receptive stage.

The Therapeutic Uses of Silica.

In an editorial on this subject, the *Lancet* of August 22, 1925, states that in England silicic acid and the silicates are generally considered unsuitable for administration per os, although the sodium salt is used in powdered form in France. In a recent article in the *Wiener klinische Wochenschrift* (No. 27, 1925) Friedrich Luithlen points out that silica is the foundation of the elasticity of living tissues and that healthy activity depends on the maintenance of a proper balance between the calcium and silica constituents of the body. In youth the silica content is at its highest, decreasing with maturity until in age there is a deficiency, with a corresponding preponderance of chalk. Hence the altered biological processes, the diminished pliability of the tissues, and the liability to fractures. Arguing from these facts, Luithlen has tried the use of silica in certain senile and other conditions attributable to silica deficiency. The best results have been obtained in cases of pruritus senilis, where there is no definite metabolic cause for the irritation and the superficial layers of the epidermis are dry and brittle. In many instances where colloid treatment, hypotonic solutions, and organotherapy had been tried in vain, intravenous injections of silicic acid rendered the skin soft and supple and restored the circulation. Good results have also been obtained in all kinds of senile skin disorders such as psoriasis, furunculosis, and acute weeping eczema in the aged, as well as the further advantage of increased immunity and better conditions of life resulting from the restoration of chemical balance in the tissues. The method has also been applied with satisfactory results to cases of arteriosclerosis, stenosis of the cardiac valves, and tuberculosis of the lungs. The drug may be administered hypodermically, or per os in youthful cases in which the power to absorb silica has not been lost. For this purpose a "silicic acid tea" or the organic preparations can be used. For older people it is best given intravenously, in the form of a one-per-cent watery solution of sodium silicatum purissimum. The vials should be well shaken, as sedimentation is likely to take place, and 1 cc may be given on alternate days up to 15 to 20 doses. If the claims of Luithlen are substantiated by further observations we shall have in silicic acid a most valuable therapeutic weapon against a series of trying and obstinate conditions.

Drainage of the Thoracic Duct in Experimental Peritonitis.

STEINBERG in the *Journal of Experimental Medicine* for July, 1925, states that this work was undertaken on the assumption that bacteria or their products enter the lymphatics and are transmitted through the thoracic duct into the blood. It was further assumed that death in peritonitis is due to the invasion of the circulation by bacteria or their products. The latter assumption has not yet been proved. The finding of bacteria in the blood of animals with peritonitis by some investigators and the failure to do so by others may be due to differences in the species of animals employed. Observations were made, which will be published elsewhere, on rabbits, whose peritoneal resistance to infections is comparatively low; and bacteria were found in their blood, while in the case of cats and dogs, whose resistance is higher, bacteria were not recovered.

The work of Bolton in 1921, on peritoneal absorption of dyes, throws some doubt on whether the thoracic duct is of any conse-

quence in draining the peritoneal cavity. He arrived at the conclusion that the peritoneal cavity is drained primarily by the right lymphatic duct and only to a small extent by the thoracic duct. He further concludes that colloidal dyes and bacterial products of not too great molecular complexity may be absorbed directly into the blood from the peritoneal cavity while colloids of greater molecular weight are taken up by the lymphatics.

When care is taken to produce a peritonitis, which in itself is almost uniformly fatal, drainage of the thoracic duct in dogs has no favorable influence upon the course or result of the peritonitis.

Under the conditions of his experiments the thoracic duct did not serve in any important way as a drainage tract for bacterial contamination of the peritoneal cavity.

The Treatment of Asthma.

In the general discussion on W. Langdon Brown's paper on this subject before the British Medical Association, in the *British Medical Journal* of August 20, 1925, HURST states it is rare for the exciting causes to be so completely controlled that no further attacks of asthma occurred even when the individual was tired or otherwise abnormally susceptible. As nothing is more exhausting than frequent bouts of asthma with the loss of sleep to which they give rise, it is of the greatest importance to stop the actual attacks as quickly and as completely as possible. Every asthmatic owes a debt of gratitude he can never repay to Dr. Brian Melland of Altrincham, whose discovery in 1910 that adrenalin could stop an attack was the one great advance in the treatment of asthma since Sir John Gloyer wrote his monograph on the subject over two hundred years ago. Hurst has developed the technique of the adrenalin treatment in his own case and in that of numerous patients who have come under his care, with the result that he believes it is quite unnecessary ever to have a bad night as a result of asthma. It is essential that the injection should be given directly the attack begins; during the night it should be given the moment the patient is sufficiently awake to realize that he requires it. Adrenalin is the only drug administered subcutaneously which he always advises the patient to give himself, as otherwise it is impossible to inject it sufficiently promptly. If given without delay, the patient is often asleep in less than five minutes from the moment he awoke feeling dyspneic. Used in this way very small doses are sufficient. He never gives himself more than 1 minim of 1:1000 solution of adrenalin chloride, and he has rarely found a patient who requires more than 3 minims, although in many instances he has been told by the patient's doctor that 5, 10, or 15 minims were needed or that adrenalin was entirely without effect. This was always due to the fact that it had not been injected until the attack was at its height. Under such conditions 15 minims might produce no other effect than tachycardia, tremor, and a feeling of collapse, whereas, given at the onset, 1 or 2 minims would have completely aborted the attack, without even producing any rise of blood-pressure.

Hurst has seen a few cases of status asthmaticus, a condition in which the patient was in a state of continuous severe asthma, which lasted for many hours or even days in spite of the use of adrenalin and morphine, with the result that he became completely exhausted from want of sleep and the physical effort of forced respiration. Such attacks could always be stopped by the continuous injection of adrenalin. After injecting 3 minims the needle was kept in position; 1 minim was then injected every quarter of a minute until relief occurred. As many as 40, 50, or 60 minims might have to be given, but eventually the attack ceased and the patient fell asleep as the last injection was given. These enormous doses produced no unpleasant symptoms, although under ordinary conditions 5 minims injected in one dose might have produced tachycardia and considerable malaise, as adrenalin was excreted so rapidly that no cumulative effect occurred, except, curiously enough, in relieving the asthma. When the attack is

at last brought to a temporary conclusion, the patient should be removed without delay to some place where past experience has shown that he is likely to be free from asthma, as it is difficult to prevent repeated relapses after a very severe attack except by a change of environment.

Some Results of Light Therapy.

In the *Practitioner* for August, 1925, SEMON and ORMSBY state that their results in lupus show clearly that carbon-arc irradiations are not by themselves sufficient to effect a cure.

The septic complications both in this disease and in tuberculous joints, as also in chronic osteomyelitis, were, however, rapidly controlled in all such cases.

The degree of pigmentation is a valuable prognostic index.

The general health and spirits, the appetite, and weight were notably improved in the case of children especially.

In one case the light may have flared up a latent pulmonary focus, and this possibility is an urgent indication for extreme care in the selection of cases for treatment.

The Treatment of Flatulence.

In the *Lancet* of August 22, 1925, HARDY states that the successful treatment of intestinal decomposition depends on the removal of the primary cause and the recognition of the associated disturbance of intestinal function. The stools are often characteristic; in fermentative cases they tend to be acid in reaction, frothy, somewhat sour-smelling, and microscopically show undigested starch granules, whereas in protein putrefaction they are alkaline, have a putrid odor, and microscopically show undigested meat fiber and an excess of Gram-positive organisms.

A full consideration of the treatment of these types of diarrhea is outside the scope of this article, which is concerned with one symptom only, namely, flatulence. This may or may not be of importance, but its efficient control will depend on (*a*) regulation of the diet, and (*b*) use of drugs.

As a means of controlling fermentation and putrefaction much greater reliance can be placed on suitable dietetic modifications than on the exhibition of the so-called intestinal antiseptics, which are at best very uncertain in their results.

In carbohydrate fermentation the chief source of the flatulence is marsh gas derived from the breakdown of cellulose. Green vegetables and uncooked fruits must, therefore, be strictly forbidden, and in some cases the total exclusion of carbohydrates from the dietary may be necessary. Generally, however, sugar, malted foods, milk, purée of potato and celery may be allowed in moderation. Cammidge gives the following diet table for intestinal flatulence:

The patient may have: White meat, lean red meat, sweetbread, tripe, calves' head, chicken, pheasant, tongue, lightly boiled or poached eggs, fresh butter, a little sweet cream, toast or old bread, crusts, wholemeal bread, light farinaceous food with fruit juices, spinach, celery, asparagus, a little potato, unsweetened stewed apples or plums, raw apples not too sour, almonds, Brazil nuts, cocoa essence, meat extracts, and one ounce of whisky in four ounces of hot water with two meals.

The patient must avoid: Green vegetables (especially cabbage, radishes, peas, beans, lentils, salads), pears, raw plums, mayonnaise, oily or greasy foods, milk, cheese, excess of sweets, pastry, fresh bread, pork, veal, venison, sausages, rabbit, goose, duck, pigeon, curries, recooked meats, smoked fish, eels, salmon, herrings, mackerel, tea, coffee, wine, malt liquors, soup, broth.

In very intractable cases a diet of cooked minced meat and water, the well-known Salisbury cure, may be tried, but it is very irksome and should be limited to a period of six weeks.

In protein putrefaction a strict lacto-vegetarian diet is more suitable at first. Chicken, game, and fish may be added later, but mutton, beef, and veal should be withheld for some time after the diarrhea has ceased. Sour milk is worth a trial in these cases with the object of replacing an abnormal intestinal flora with one inimical to

putrefaction. The milk should be sterilized by boiling and then allowed to cool to a temperature of 120° F. A fresh culture of the Bacillus bulgaricus (tablets are too uncertain in their action to be reliable) is then added to the milk in a thermos flask and the whole incubated for 18 hours. It is then ready for use, and may be taken in quantities starting with half a pint a day and gradually increasing until one and a half pints a day are taken. Better results are claimed by certain American writers, Rettger and Cheplin and Kopeloff, by the use of the Bacillus acidophilus as the souring agent. They use at least 1000 cc of the freshly inoculated milk and combine it with the administration of lactose, which promotes the growth of the bacilli. The method does not appear to have received an extended trial in England, and there are technical difficulties in the way of its general adoption.

Drugs are administered with three objects—to aid digestion, to control bacterial decomposition, and to relieve flatulence. In cases associated with achylia hydrochloric acid should be given in the full doses recommended by Hurst, not less than one drachm of the dilute acid in a tumbler of water flavored with orange being sipped during and for a short time after each meal. In pancreatic deficiency various preparations such as takadiastase, pankreon, and holadin may be tried after meals, but are not very satisfactory. Intestinal antiseptics for the control of putrefaction and fermentation are legion, but the evidence of their value is somewhat unconvincing as a satisfactory clinical assay is well-nigh impossible. The best appeared to be calomel, especially in divided doses, benzonaphthol (10 to 15 gr. t. i. d. after meals). Colloidal kaolin is an efficient absorbent of bacterial toxins and may be given in half-ounce doses in water t. i. d. For the immediate relief of flatulence the essential oils are distinctly valuable, the best perhaps being oil of cajuput (2 minims on a lump of sugar) and oil of turpentine (15 minims in capsules or cachets). A tablespoonful of charcoal taken once or twice daily is also useful and helps to render the flatus odorless.

As in the case of gastric flatulence, deficient absorption of gas occurs but rarely, and then as a result of chronic venous congestion in heart failure and hepatic cirrhosis. The main lines of treatment have been sufficiently indicated in a previous article in the *Lancet*. Inflammatory conditions of the colon may also interfere with the normal absorption of gases and account, in part at least, for the flatulence complained of in these cases.

Flatulence may occur as a result of organic obstruction or in cases of constipation when the intestine contracts on a fecal mass and thus imprisons flatus. Treatment is directed to the relief of the obstruction.

Apart from the causes already discussed, great inconvenience and distress may be caused by the frequent passage of flatus from causes purely emotional. The condition is analogous to nervous diarrhea and is liable to be a very distressing symptom in moments of great mental strain. Diet is ineffectual in cases of this type unless, as sometimes happens, there is an associated intestinal catarrh, and treatment should be directed towards lessening the excitability of the gastrocolic reflex by a full dose of bromides combined with belladonna given at a suitable interval before the symptom is liable to occur.

Acute gaseous distention of the intestines occurs in certain severe abdominal conditions such as intestinal obstruction, acute general peritonitis, and acute pancreatitis. It is met with also as an important complication in certain infective fevers, notably enterica and pneumonia.

Acute abdominal conditions require surgical treatment, but in the absence of intestinal obstruction, or following its relief, the general principles of the treatment of meteorism are applicable to all cases. All food should be withheld with the exception of small quantities of whey and albumin water. Local applications to the abdomen such as turpentine stupes or hot fomentations are valuable, particularly for the relief of pain. Enemata of turpentine (½ to 2 drachms to a pint of soapy water) should be given, and oil of turpentine, 15 minims in capsules taken by mouth every three

hours, is useful. In severe cases the hypodermic injection of pituitrin 1 cc, or eserine 1/50th gr., may be tried in the absence of obstruction. The danger of perforation in typhoid should be remembered and these powerful drugs used with great caution, and only as an extreme measure.

The Effect of Ephedrin on Experimental Shock and Hemorrhage.

CHEN in the *Journal of Pharmacology and Experimental Therapeutics* for September, 1925, recalls that it has been shown that ephedrin, an alkaloid isolated by Ma Huang, possesses sympathomimetic actions, and that its outstanding feature is its circulatory stimulation by acting on both the cardiac accelerator ganglia and endings. The rise in blood-pressure persists for so long a time that it can be actually used in cases of hypotension such as Addison's disease.

The purpose of his present paper is to report the influence of ephedrin in hemorrhage and in shock induced by different laboratory methods.

Although the question of shock is not yet settled, some hint toward the explanation of its cause has been made in connection with the investigation of wound shock by the British Medical Research Committee during the world war. The relation of different types of shock is better understood. Dale explains the fall of blood-pressure in histamine shock as due partly to the stagnation of blood in the dilated capillaries, and partly to the loss of plasma through the abnormally permeable endothelium. The effective blood volume is greatly reduced, and the heart is practically working with nothing. Under certain conditions surgical and traumatic shock is apparently due to nothing but the absorption of histamine or histamine-like substance from the injured tissues after autolysis, as illustrated by Bayliss and Cannon. In Witte's peptone, Abel and Kubota and Abel and Geiling have shown that the most toxic element is possibly histamine, and Underhill and Ringer have also shown the close resemblance between peptone and histamine shock. Suggestion has also been made by Dale that anaphylactic shock follows the same mechanism after the interaction of antibody with the corresponding antigen. Should the cause of shock be due to histamine or histamine-like substance (not chemically but physiologically) and should Dale's idea of histamine shock stand, the explanation of the effect of ephedrin in the cases studied here may be fairly simple.

In their previous papers they have shown that the circulatory stimulation by ephedrin is due to increased cardiac output. Their present results also show that the rise in blood-pressure after ephedrin during shock is due to an increase in cardiac output and not to arterial constriction. The increase of heart output may play an important part in dislodging the stagnated blood in the capillaries and bringing more blood into effective circulation, which a normal heart cannot do during shock.

When effective, the value of the action of ephedrin is undoubtedly high, for it breaks the vicious cycle of shock, brings more nutrition to the heart itself, the medulla and other essential oragans, and probably hastens the destruction or elimination of histamine or histamine-like substance, as it has been shown that histamine is rapidly destroyed in presence of efficient circulation.

In case of hemorrhage, ephedrin will be a great help so long as there is hope of restoration of blood volume. Should it exceed 25 per cent of the total volume, it seems to be of no use. Should it be less than 25 per cent, ephedrin is to be used rather as an emergency drug to sustain the pressure while transfusion is in preparation.

Judging from the experimental results, ephedrin can be possibly used in surgical and traumatic shock or in hemorrhage. As it possesses a persistent action, it may also have prophylactic value in long operations against surgical shock. Anyway, it will be worth while trying out since a therapeutic dose has never made the situation worse.

It should, however, be remembered that ephedrin only acts under favorable conditions. When the heart-beat becomes impaired or respiration ceases, ephedrin sel-

dom proves to be of value. When it does work its length of action again depends on degree of shock, stage of shock, or extent of hemorrhage. It seems beyond doubt that ephedrin is most valuable in early stage of shock, and in mild forms of shock. In severer cases, ephedrin is not effective, but may act as an adjuvant to other measures such as blood transfusion.

He concludes that ephedrin raises blood-pressure in hemorrhages and in experimental shock induced by histamine, peptone, anaphylaxis, or by surgical manipulation.

The rise in blood-pressure is permanent under favorable conditions, and this effect of the drug is due to increased cardiac output and not to arterial constriction.

Ephedrin fails to act when the heart-beat becomes impaired, or respiration ceases, or the degree of shock is too extensive, or when hemorrhage exceeds 25 per cent. It has, however, no harmful effects.

Prohibition and Narcotics.

In an editorial on this subject *The Medical Times* for September, 1925, states that the Foreign Policy Association has collected a large amount of data going to show that the use of narcotics has not increased since the Volstead Act was passed.

A steady decrease in the number of addicts in the United States has been noted since 1900; in other words, before prohibition was enacted. There are now only 150,000.

There is no reason why prohibition should cause great numbers of people to change from alcohol to narcotics, as has been frequently alleged. There can be not much doubt that they would were alcohol actually unobtainable.

The leading authorities are agreed that there is no connection between drug using and prohibition. "Prohibition has had no effect whatsoever on the prevalence of drug addiction in the United States."

Why should persons of defective nervous organization whose discomforts are sufficiently assuaged by alcohol change to more expensive, less available and unnecessarily potent drugs of the narcotic order? Those who require the latter are in a class by themselves and would obtain no relief from alcohol.

So long as the users of alcohol are not deprived of it there will be no danger of prohibition increasing the consumption of narcotics of the major type.

The New York State Department of Health reports eleven times the number of deaths from alcoholism in New York State in May of this year than in May, 1920 (7 in 1920 and 79 in 1925 during that month). "The continued rise in mortality from alcoholism deserves special mention," says the report. "Statistics of mortality from alcoholism are quite incomplete. Since alcoholism has never been considered a respectable cause of death, the figures quoted above without doubt do not represent all of these deaths, a portion of them being hidden under other rubrics. The actual facts are very likely even darker."

The report also shows that the deaths from alcoholism in New York City and State were decreasing before prohibition, but have been steadily increasing since 1920, so that in 1924 they were much more numerous than in 1918 and 1919.

So long as alcohol is as freely available as the foregoing facts would seem to show we may look for a continued, even if slow, decrease in the use of the more powerful narcotic drugs.

Prognosis and Treatment of Arterial Hypertension.

PHILLIPS in the *Ohio State Medical Journal* for September, 1925, reminds us that for many years the iodides have been given routinely in the treatment of hypertension, but he has never seen any benefit from their use except in cases of syphilis. In cases in which hypertension is associated with an adenomatous goitre, hyperthyroidism may result from their use.

Nitrites are of little value except in those patients who have symptoms of angina or in whom the danger of cerebral hemorrhage is shown by transient attacks of aphasia

or of hemiplegia. In some of these cases temporary benefit may be obtained by venesection. Patients who are sleepless and nervous may be made more comfortable by the use of sodium bromide combined with sodium nitrite. It is important to remember that a patient who has had a hypertension of from 190 to 200 for years will not be comfortable if the blood-pressure is reduced much below this level. Digitalis is indicated in all cases in which there are signs of myocardial weakness, such as dyspnea, hepatic enlargement, edema, cardiac irregularities, particularly auricular fibrillation and a lowering pulse-pressure. In these cases digitalis should be given in sufficient dosage to bring about cardiac compensation if possible. If there is much edema, diuretin, gr. x-xv three times a day, should be given.

Headaches may be relieved by nitrites, a hot mustard foot-bath, free catharsis, and in some persistent cases by lumbar puncture.

Angina may be relieved by rest, restriction of tobacco, nitrites, and in severe cases by hypodermic injections of morphine and atropine. If there are signs of myocardial failure, digitalis is useful for the prevention of recurrent attacks of angina. Bromides and belladonna are also useful in the intervals between attacks.

Pulmonary edema is best relieved by a hypodermic injection of morphine sulphate gr. ¼ with atropine gr. 1/100. If this does not give relief a venesection should be done. Sometimes a hypodermic injection of from ½ to 1 mgm. of strophanthin gives quick results. [This causes too much pain.—ED.]

If uremia develops the diet should be restricted, hot packs given, and elimination promoted by free purgation and in some instances by venesection; the heart should be supported by digitalis and the nervous symptoms combated by bromides, chloral, or morphine.

In summary, it may be stated briefly that the treatment of a patient with arterial hypertension requires a careful study of his physical condition, particularly of the heart, the arteries, and the kidneys. It requires also a careful study of the environmental conditions of the patient as to his work, his rest and recreation, and his home conditions. With the knowledge thus obtained the physician should so regulate the life of the patient as to surround him with all the influences that will make him happy and useful without making an invalid out of him, and as the terminal stages of the disease with their attendant complications manifest themselves the physician should be prepared to meet these as they arise and to make the patient as comfortable as possible. In the treatment of no other group of patients is an optimistic spirit on the part of the physician so helpful as in these cases of arterial hypertension.

The Germicidal Properties of Soap.

In the *Journal of Infectious Diseases* for August, 1925, WALKER insists that soaps are not to be regarded as general germicides, but in using them for their detergent properties, advantage may be taken of their germicidal activity against the streptococcus, pneumococcus, diphtheria bacillus, and, to a less extent, against the typhoid bacillus.

The thorough washing of the hands with the formation of a good lather will destroy any adhering diphtheria bacilli, streptococci, and pneumococci. Any ordinary soap will serve for this purpose.

Cocoanut-oil soap is the only soap appreciably active against the typhoid bacillus at ordinary temperatures. In order to kill typhoid bacilli on the hands, the washing should extend over a period of at least three minutes, with the formation of an exceedingly stiff lather.

The use of a nail-brush in washing the hands in order to render the surface underneath the nails accessible to the action of soap is desirable.

The activity of soap is greatly enhanced by raising the temperature.

This germicidal activity of soap is in addition to any sterilizing effect brought about by it due to the mechanical removal of bacteria.

The activity of cocoanut-oil soap against the typhoid bacillus seems to be due to its high content of the saturated fatty acids,

and the very low proportion of unsaturated acids.

Foreign substances interfere markedly with the germicidal activity of soap.

It is suggested that linseed oil or cottonseed oil used in the manufacture of the official sapo mollis might be advantageously replaced by cocoanut oil. The greater use of cocoanut-oil soap would aid in the prevention of the spread of typhoid fever by hand contamination.

The Effect of Spleen Extract and Bone-marrow on the Blood Picture in Pulmonary Tuberculosis.

In the *American Journal of the Medical Sciences* for September, 1925, DUNHAM states that twenty-three cases of active pulmonary tuberculosis are reported. Two showed no improvement in the blood picture; three were slightly improved, seven moderately improved, and eleven were markedly improved, making a total of 21, or 91 per cent improved.

He asserts that spleen extract and bone-marrow will definitely increase erythrocyte and hemoglobin production, and expresses the belief that further study of the use of this preparation in tuberculosis is indicated.

The Medical Treatment of Pyloric Stenosis of Infants.

DAVISON in the *Bulletin of the Johns Hopkins Hospital* for September, 1925, asserts that certain types of patients with pyloric stenosis should be operated upon before medical therapy is attempted. First are those infants who come to the hospital with unmistakable signs of complete pyloric obstruction—*i.e.*, with the starvation type of stools and histories of having vomited all food and water for several days. If many days have elapsed since the onset of vomiting, the infants will be in a serious condition, so that every effort should be made to prepare them for an early operation. The pylorus in this type of patient is almost completely occluded. Autopsies in those who have died have demonstrated that the pyloric tumor is cartilaginous in consistence and that it protrudes into the duodenum as the cervix uteri does into the vagina. At autopsy tremendous pressure is required to force fluid from the stomach through the narrowed lumen of the pylorus. Consequently, the patient's only hope of recovery is in an operation as soon as possible. Blood transfusion and the intravenous or intraperitoneal injection of normal salt solution will often, within twenty-four hours, sufficiently improve the condition of an apparently moribund infant so that an operation is possible. The Fredet-Rammstedt operation is the preferable one because of its simplicity, the short time required, and the consequently diminished amount of shock. The operation is facilitated and the incidence of post-anesthetic pneumonia in operations performed under ether is apparently reduced if the patients's stomach is washed out immediately before the operation. Local anesthesia with novocaine is sometimes preferable to ether.

The second type of patient in whom an early operation is advisable is the breast-fed infant whose mother, either through lack of coöperation or because she lives at a considerable distance from the hospital, cannot nurse her child with regularity. Medical treatment may often cure these patients, but frequently the mother's milk supply will fail if she does not nurse regularly, and then the dangers of prolonged hospitalization during convalescence will be greater than the operative risk.

In clinics in which the surgical staff has had a large and successful experience with the Fredet-Rammstedt operation, or in hospitals in which it is very difficult to obtain sufficient woman's milk, it is probably a better practice to submit a relatively large percentage of the patients to operation.

With these exceptions it is usually preferable to attempt medical treatment. This has consisted in feeding the infant with a sufficient amount of woman's milk at intervals of four hours to give him at least 100 calories per kilogramme of body-weight per day. If the mother cannot nurse him, the milk from another nursing woman is ad-

ministered by bottle. This amount has varied from two ounces at a feeding for the smallest patient in the series, an infant weighing five pounds, to four ounces at a feeding for a child of ten pounds. If this feeding is vomited within two hours, an amount of woman's milk approximately equal to that vomited is refed. If this refeeding is vomited, the infant's stomach is washed with water or one-per-cent sodium bicarbonate solution, heated to 108°-110° F., and an amount of woman's milk equal to that vomited is left in the stomach when the tube is withdrawn. If woman's milk is unobtainable, cow's milk and sugar mixtures are used until woman's milk can be secured. However, cow's milk is a very poor substitute for woman's milk in the feeding of patients with pyloric stenosis. All feedings are of course given slowly. The infants are held up at intervals during the feeding and immediately afterwards, to allow them to expel any air that they may have swallowed. Most of the infants suffering from pyloric stenosis are hungry and will take the milk that is offered. For those who refuse food, the feeding should be given by passing a stomach tube, washing out the stomach with warm water or sodium bicarbonate solution and leaving the required amount of woman's milk in the stomach.

Surgical and Genito-Urinary Therapeutics

The Treatment Employed in One Hundred and Twenty-five Consecutive Cases of Head Injuries.

WEAVER (*Surgery, Gynecology and Obstetrics,* September, 1925) reports on 125 consecutive cases of head injuries. There were 22 deaths. Thirty-seven of these patients were subject to operation. Of the 103 patients who recovered only five showed residual neurological symptoms at the time of discharge from the hospital.

In the study of these head injuries Dowman's classification has been followed.

Class A. Massive brain injury with evidence of rapid exhaustion of the medullary centers, and death within one to several hours after admission.

Treatment: These cases are hopeless and operation is contraindicated.

Class B. Definite evidence of middle meningeal hemorrhage. An immediate operative interference is imperative. One must keep a clear mental picture of the cardinal symptoms, which are as follows: A free interval of consciousness, often of short duration. In children several days of consciousness may elapse before pressure symptoms develop. On this account children should be kept under the closest observation for several days when the type of injury would lead one to suspect the possibility of extradural hemorrhage. A slow bounding pulse, following a slightly rapid and small pulse. Stertorous respiration, as contrasted with the superficial respiration of cerebral concussion. The gradual development of hemiplegia or contralateral convulsions.

Treatment: The operation of ligation of the bleeding artery with subtemporal decompression must be done, and done quickly.

Class C. Simple or compound depressed fracture, with localized brain contusion, with or without indriven bone fragments.

Treatment: Débridement is indicated. Contused brain and blood-cot are carefully removed by catheter suction. The dural opening is accurately closed if possible, and the bone defect is partially filled by replacing the fragments of bone that have been removed.

Class D. Classic manifestations of rapidly increasing intracranial pressure which are well within the period of medullary compensation.

Treatment: Though these cases are in a measure border-line ones, and though many would possibly recover without operation, subtemporal decompression, with or without a rubber wick drain under the temporal lobe, offers the best chance of recovery.

Class E. Definite evidence of brain injury exhibiting no classic findings of acutely increasing intracranial pressure, yet of the type that experience has shown is liable to develop gradually increased intracranial pressure due to fluid accumulation.

Treatment: This is the large class of cases in which hypertonic solutions are used with great success. In the large majority of this group it will suffice to give one-half ounce of a saturated solution of magnesium sulphate every two hours for forty-eight hours (smaller doses in proportion for children). After this, the interval of doses is lengthened day by day as the patient improves, until the seventh to tenth day, when the hypertonic treatment is discontinued. If, despite the oral administration of magnesium sulphate, there should develop any evidence of increased intracranial pressure, such as bilateral choking, stertorous breathing, etc., this treatment may be supplemented by one intravenous injection of fifty cubic centimeters of a thirty-per-cent sodium chloride solution for quick effect, followed by intravenous injection of ten cubic centimeters of a solution of magnesium sulphate. If as in a few cases the pressure symptoms continue and especially a hemiparesis develops, then a subtemporal decompression with rubber wick drainage may be resorted to as suggested by Naffziger. The hypertonic treatment in this class of cases is given with the idea of preventing late pressure symptoms caused by fluid accumulation, and thereby doing away with the necessity of late operation.

Class F. So-called concussion with no evidence of gross brain damage. After a few hours these patients are mentally clear and there are no gross neurological findings.

Treatment: Physiological rest and free purgation suffice.

Class G. Depressed fracture of a mild degree, giving rise to no symptoms whatsoever.

Treatment: Though many of these patients appear to be in excellent condition and are free from frank symptoms, it will frequently be found that underlying the depression is much contused brain and blood-clot, a condition that may result in the development of a brain cyst. These fractures should be elevated, the dura opened, contused brain, if present, removed by careful catheter suction, the dura closed, and the bone fragments replaced.

Class H. Scalp lacerations without damage to the underlying structures.

Treatment: Scalp injuries are generally treated too lightly. The edges of these wounds should be trimmed away and wound should be carefully closed with fine silk sutures. Unless this is done, especially if there is a slight injury to the underlying structures, the condition enters immediately into the Class A of causes of brain abscess as outlined by MacEwen.

Intraperitoneal Transfusion.

CONRAD (*Virginia Medical Monthly*, September, 1925) reports two cases in which he used citrated blood, 10 cc of a 2-per-cent solution of sodium citrate to 100 cc of blood. It has been shown that red blood cells can pass through the peritoneal mesothelium without any morphologic changes. While some authors state it is not necessary to type the blood, the author feels it is best so to do.

The bladder being empty, the needle is inserted at a point half-way between the symphysis and umbilicus, using a needle with a short bevel at the point. A 30-cc Luer glass syringe was used as an injecting instrument, and 50 cc of blood was given to one patient and 100 cc to the other for the first injection.

The first case was that of a child one year old, suffering from severe pyelitis and secondary anemia. The hemoglobin was 26 per cent. The blood injected in this case was taken from the father. The day after the first injection the hemoglobin had risen

to 28 per cent, red blood cells 1,600,000. The day after the third injection it had risen to 44 per cent, 150 cc of blood having been given. Thereafter there was a steady rise in hemoglobin and return on the part of the infant to health.

The second case, 13 months old, suffered from mild scurvy, chronic diarrhea, condensed milk feeding, and severe edema of the face, body, and extremities. The hemoglobin was 40 per cent and the red count 1,480,000. One hundred cc of the father's citrated blood was given intraperitoneally. Two days later the hemoglobin was 50 per cent, red blood cells 2,032,000. A further 100 cc of blood having been injected, the hemoglobin rose to 65 per cent and shortly reached 75 per cent, the child then taking food well and exhibiting no edema.

Sciatica Treated by Epidural Injection.

MARBURY (*Virginia Medical Monthly*, September, 1925) notes that injection of the epidural space in the treatment of sciatica is not a new conception. A number of authors have reported good results, and the only wonder is that it has never been more popular, seeing that most forms of treatment, both medical and surgical, have not been brilliant in their results. Stretching the nerve was practiced at one time, but has been abandoned. Manipulation under an anesthetic has proven of benefit in certain cases, but on the whole has not been particularly beneficial. The removal of foci of infection, such as those about the teeth, or tonsils, or in the gall-bladder, is important and should be attended to in each case. The treatment by immobilization in a plaster cast has been beneficial, particularly in cases in which there is a definite history of injury. These are just a few of the many treatments that have been used to alleviate the pain commonly known as sciatica.

Cathelin and Sicard injected the epidural space as early as 1901 for relief of pain in sciatica. They used cocaine in saline solution. Ott reports forty-eight cases treated by the injection of 50 cc of 0.5-per-cent novocaine in physiological saline. At the same time all possible foci of infection were removed. In this series 29 per cent were permanently cured, 37 per cent were restored to active life with a fair degree of comfort, and 34 per cent were apparently not improved. Other authors have reported even greater success. Feuillade had 80 per cent of cures among soldiers.

The technique is fairly simple. No previous preparation of the patient is necessary. The injection may be done at a hospital, at the patient's home, or in the office, where the case is ambulatory. The patient lies face downward over several pillows placed so as to elevate the buttocks. The hiatus sacralis is located at the junction of the sacrum and coccyx. In a thin subject this is not difficult, but in very stout subjects it is helpful to put a gloved finger in the rectum and, by manipulating the coccyx, locate the hiatus. Under strict aseptic conditions a Labat spinal needle is inserted through the skin at an angle of about 45 degrees, and a small amount of novocaine injected. This is continued until the needle can be felt to impinge upon the bone. A little novocaine is injected ahead of the needle at each advance, which makes the procedure practically painless. When the needle is felt to touch the sacrum it is depressed about 10 degrees and usually slips into the sacral canal without difficulty. It should be inserted 5 or 6 cm., being careful not to puncture the dura. If any spinal fluid appears after waiting a few seconds the needle is withdrawn one or two centimeters, and the injection is not begun until it is quite certain that the needle is not in the subarachnoid space. The solution is prepared by sterilizing novocaine in a small amount of physiological saline and then adding enough of the latter to make 50 cc of a 0.5-per-cent. The solution is injected slowly. The patient usually complains of pain on the affected side; this is a favorable sign.

If one injection does not relieve the pain it is well to repeat it in two days. Several injections may be given.

Of the ten cases that form the basis of

this report, seven were male and three female. All but two had definite pain along the course of the sciatic nerve. One of these had pain in both legs which was generalized; the other on the outer side of the thigh. Seven were confined to bed when first seen and three were ambulatory. Only one gave a definite history of an injury, and in another case the attack followed a long automobile ride and a bad cold. Lasegue's sign was positive in six cases. An *x*-ray was taken in four cases, and in each case the roentgenological report was osteoarthritis of the lumbar spine or sacral region, or both. The number of injections varied from 1 to 4—average 1.6. Focal infection may have played a part in five cases. The average duration of symptoms before injection was 7.3 weeks. Four cases were apparently cured, three improved, and three not improved. One of the latter probably should not be counted because it is doubtful if any fluid reached the epidural space.

The author records a number of cases in detail—one of them a bedridden woman suffering from sciatica for more than a year. Four injections each of one-half per cent novocaine in the epidural space at intervals of two to three days accomplished a cure. She had previously had alcohol and novocaine injections without benefit.

A man, fifty-five years of age, complaining of pain so severe as to require the use of morphine. The first injection in the vicinity of the sciatic nerve brought no relief. Forty cc injected into the epidural space was followed by cure.

Gyneplastic Repairs Following Childbirth.

Bubis (*American Journal of Obstetrics and Gynecology*, August, 1925) notes that the care of the parturient woman at the present day involves much more than the delivery. Modern obstetric practice includes: Prenatal care, necessitating a general examination, measurements, and noting of abnormalities. Bad teeth, tonsils, and other foci of infection are corrected, if possible. The growth and position of the fetus, the condition of the breasts, bowel movements, urine, blood-pressure, and diet are regularly observed. By this careful prenatal attention such complications as eclampsia, toxemia, etc., have become almost extinct.

Natal care necessitates the use of strictest asepsis and antisepsis in delivery. Before the days of Semmelweis and Lister, the maternal mortality in the hospitals, due to infections, varied from 18 to 30 per cent. Since then it has been reduced to less than one per cent. Version, episiotomy, Cæsarean section, forceps, and other means of shortening the labor period are being used more frequently and are comparatively safe in the hands of the expert. The suffering during labor and childbirth is alleviated by various known methods.

The postnatal care consists of rest in bed for a certain number of days, followed by regulated exercises, diet, etc. Involution and position of the uterus are observed at stated intervals after the patient leaves the hospital.

Bubis advocates as a routine procedure repair of lacerations immediately after the expression of the placenta. The cases operated on progressed satisfactorily, and the wounds did not seem to be affected by the presence of the lochia. The delivery was accomplished with minute attention to surgical cleanliness. During labor only rectal examinations were made. When the pains occur about every five minutes and the cervix is distinctly dilated a morphine-scopolamine course is started, 1/6 to 1/4 of the former and 1/150 of the latter; another dose of scopolamine, gr. 1/250, is given forty-five minutes later, and thereafter in doses of 1/300 of a grain is repeated every half-hour depending upon the progress of labor and severity of the pains. If the patient is ready for delivery she is anesthetized with nitrous-oxide oxygen gas, occasionally supplemented by ether, and is placed in the lithotomy position, the parts of the external genitals being thoroughly cleansed with green soap, followed by alcohol, and by a painting with 2-per-cent iodine solution; followed again by alcohol.

The patient is then draped and the bladder is catheterized. Immediately after the fetal head is delivered 1 cc of pituitrin is injected into the patient's buttock. When the placenta is expelled 1 cc of ergotal is injected into the opposite buttock. The cervix is then carefully examined for old or new lacerations that may be present. Any other lesions of the genital tract, if found, are repaired. This is done whether the lesion be an old one or has been produced in the last delivery.

The Cæsarean Scar.

SCHWARZ and PADDOCK (*American Journal of Obstetrics and Gynecology*, August, 1925) have conducted a research bearing on this matter and conclude, in so far as the guinea-pig uterus is concerned, that after abdominal hysterectomy the edges of the wound are held together by the early proliferation of fibroblasts and capillaries, not only along the line of incision, but also very definitely between the muscle bundles adjacent to this line. Muscle regeneration, if it is to play a conspicuous part in the disappearance of these scars, must do it early. The deposition of a considerable band of fibrin between the cut muscle edges forms the basis from which healing takes place. The line of defect in these cases where approximation has been good should be very small. Sutures that are placed too tight, particularly the deepest row, will cause an increased amount of necrosis and will cut through more rapidly, leaving a gaping inner defect in the wound. On account of the low vitality of the tissue under such circumstances, filling of the defect by granulation tissue should take place only after a more prolonged period of time, and thus the much more rapidly proliferating endometrial tissue has an opportunity to enter and line the defect. It is obvious that the more extensive the cutting through of sutures is, the greater will be the amount of necrosis, and therefore the greater the defect. Infection can further increase the necrosis and thereby allow the sutures to cut through more readily.

Many causes of thin scars which are lined with endometrial tissue are readily explained. The reaction around catgut sutures, with the amount of necrosis caused by them, suggests that this material is by no means the best. In contrast to this, and in the absence of infection, there was little or no reaction about the silk sutures in the guinea-pig uterus. The most important thing in the technique of elective Cæsarean section is to obtain good wound approximation with a minimum amount of suturing, with as little tension on the sutures as possible. A single row of buried interrupted sutures and an outer suture after the method used by Williams should give the best results.

Appendicitis in the Aged.

MAES (*New Orleans Medical and Surgical Journal*, September, 1925) under this title notes that appendiceal disease in persons beyond forty-five or fifty years of age is rather infrequent, but is accompanied by heavy mortality. The records of the Metropolitan Insurance Company for 1923 are quoted as corroborating this statement, as are those of the Intercompany Industrial and United States Registration Area.

During the period of 1919-1924, 2229 cases of appendicitis were admitted to the hospital with about 44 deaths, or about 2.0 per cent. Of this number 1940 patients, 87 per cent, were under forty; there were 15 deaths in this group, 0.8 per cent. Thirteen per cent were over forty; 29 died, or 10 per cent.

There were 88 cases of acute appendicitis in patients over forty during the period studied. Nineteen appendices were ruptured and 22 were gangrenous; the death-rate of the entire group being over 29 per cent. Fifteen of the 22 gangrenous cases died, a death-rate of 68 per cent, and 9 of the 19 ruptured cases, a death-rate of over 47 per cent. On the other hand, 10 of the 12 patients who developed fecal fistulæ, 83 per cent, recovered, while 8 postoperative enterostomies resulted in 100 per cent mortality. No patient under forty developed

a paralytic ileus, but 12 over that age developed such a condition, again with 100 per cent mortality.

An acute attack is nearly always preceded by a story of digestive distress over a long period of time. Then there comes a sudden attack of abdominal pain, usually of a mild character, possibly accompanied by nausea and vomiting, and a uniform soft distention without rigidity. There is a progressive increase in the pulse-rate, but the temperature elevation is not marked and the average white count is about 14,000, with some 80 per cent of polymorphonuclear neutrophiles. This is Finney's "dangerous stage of calm," so common in children and even more marked in old people because of the early occurrence of gangrene. Later, without operation, the picture becomes one of peritoneal reaction with vomiting, ileus, and a degree of illness out of all proportion to the local manifestations of the disease.

As to the appendix itself, complete gangrene is the rule, so much so that microscopic study is generally impossible. Attempts to deliver it in toto are futile and it generally comes away in pieces, the gangrene extending to the mesoappendix and even to the walls of the cecum. Attempts to suture the hole in the bowel after the appendix is removed tax the surgeon's ability to the utmost. The sutures tear out repeatedly and closure is accomplished only after extreme difficulty and much manipulation, which inevitably increases the operative and anesthetic shock.

The treatment of senile appendicitis is a problem still to be solved. It is an extremely treacherous condition not only because of its inherent dangers, but also because of the false sense of security provoked by the mildness of the early symptoms.

In this connection a history of long-standing digestive trouble gives a very helpful hint. Thalheimer, who emphasizes phlebitis as a formidable complication of appendiceal disease in old and young alike, has pointed out, with due credit to Gerster, the occurrence of chills as a valuable diagnostic sign. If we subscribe to the theory that the pathology of the disease is vascular in character we must realize the fact that prompt and radical treatment is imperative once the diagnosis is established.

Since patients who develop fecal fistula usually go on to recovery, Maes advises the securing of a mushroom catheter or a Paul tube in the cecum by a purse-string suture. The intravenous drip is also of occasional service in tiding patients over the critical period of a persistent ileus.

Tonsillectomy in Rural Practice.

HULBERT (*Medical Journal and Record*, Sept. 2, 1925) believes that the technique of tonsillectomy can be so simplified as to permit its being carried out in the home or office of the rural physician, with as satisfactory results as are obtained in the hospital—thus bringing this service within the reach of many who need it.

This paper represents a review of 100 consecutive tonsil operations taken from rural practice, covering a period of two years. Sixty-six children were operated under ether anesthesia; the adults, thirty-four, under local anesthesia. An arbitrary age of fifteen years was taken as the dividing line between children and adults. There was no fatality. In one child pleurisy developed in the third week following general anesthesia, lasting one week and terminating in complete recovery. There were no other complications. In 60 per cent of cases the patients gave as their chief complaint frequent attacks of tonsillitis, sore throat, and quinsy, varying in duration from a few days to eight weeks. In the children this symptom was associated with mouth breathing, restlessness at night, and a "general run-down condition." In this group, especially among the children, frequent winter and spring colds were common, complicated by middle-ear infection. This tendency was more marked in those patients having an abundance of adenoid tissue. Eight and two-tenths per cent of

the patients gave colds as their chief complaint; 3.5 per cent of the adults complained of rheumatism, and one patient complained of "localized neuritis." Nine per cent complained of tiredness and a lack of usual vigor. Chorea existed in one child.

As to local anesthesia, 1.5 per cent novocain solution was used, with the addition of adrenalin.

The anesthetic was infiltrated posterolateral to the tonsil, using a fine hypodermic needle on a 5-cc all-glass syringe fitted with a three-and-a-half-inch extension to permit of deep infiltration. The infiltration was started at the superior pole of the tonsil well back from the margin of the anterior pillar in an effort to get behind the tonsil and place the anesthetic in the region of the tonsillar plexus of nerves, anesthetizing the superior pole of the tonsil, the soft palate, and palatine arches. The needle was next introduced through the anterior pillar at its midpoint, and carried behind the tonsil infiltrating the capsule and lateral surface of the tonsil. The third point of infiltration was deep beneath the lower pole of the tonsil and on a line with the angle of the jaw. An effort was made to infiltrate behind the field of operation rather than in it. Postoperative pain was thus minimized.

A 26-gauge 3.5-cm. needle was used, which allowed of painless introduction and deep infiltration. The injections were made very slowly, using little force. First the right and then the left tonsil was infiltrated, allowing ten to twenty minutes for the effect to be produced. Toxic symptoms were rarely noticed.

The operation can be done quickly, causes little discomfort to the patient, and is entirely painless. The minimum amount of trauma and no resulting shock combine to make a quick and comfortable convalescence.

The patients were allowed to react in the office and then returned to their homes two or three hours after the operation. In the cases in which local anesthesia was used, the patients returned home immediately, with instructions to remain quiet. All patients were permitted cold food on the day of operation, and a regular diet thereafter. A cleansing gargle was used every two or three hours consisting of salt and soda of each one-half teaspoonful to half a glass of warm water. Healing was complete in from one to two weeks. The throats remained sore for about one week, but there was little or no discomfort after the first twenty-four or thirty-six hours. Convalescence was more rapid in the children than in the adults. Difficulty in swallowing was relieved by allowing the following powder to dissolve on the tongue: Acetylsalicylic acid, two and a half grains; acetanilid, half a grain.

In only three of the cases in this series was there any degree of postoperative hemorrhage. All were of mild type, and occurred in the cases in which operation was performed under a local anesthetic. Two were due to dislodgment of large clots by coughing; the other because of a mild inflammatory condition of the surrounding tissues. Both were arrested by direct pressure.

Forty-eight per cent of the patients have been cured of all symptoms complained of at the time of operation; forty-nine per cent were very much improved, and three per cent unimproved. The greatest percentage of cure was in the child groups; sixty per cent as compared with thirty-four per cent in the adult group. This is explained by bearing in mind the fact that the chief complaints among the children were the immediate result of their diseased tonsils and adenoids, while in the adult group the complaints were remote results or complicating conditions following long-standing tonsillar infection, many of which were permanent or had become chronic.

Tonsillitis and sore throat were decreased eighty per cent in the tonsillectomized children. The tendency to frequent winter colds was greatly reduced, especially in those having had enlarged adenoids. In this same group there was a decrease in ear infection. The incidence of measles was not affected. The tendency to diphtheria infection was reduced.

Therapy of Severe Burns.

RIEHL (*Wiener klinische Wochenschrift,* July 23, 1925) states that severe burns of the skin have always been a source of worry to the surgeon, because in cases in which more than one-fourth of the total skin area has been burned the prognosis has invariably been fatal. Two of Riehl's assistants have shown that in those who suffered a burn involving the total skin area, the life expectancy has not been greater than seven hours. Depending on the area burned, the life expectancy has increased until in those in whom less than one-fourth has been involved it is forty-three hours or over. The use of morphine or the complete water-bath has led to a diminution of pain, but has apparently also decreased the patient's chances. Similarly the hot-air treatment with the purpose of creating a crust from which the toxic products of the burn would not be absorbed has been fallacious. In the author's opinion, surgical treatment, the removal of the burned areas, and the exhibition of large amounts of fluids especially by hypodermoclysis are the best procedures. In addition, he has added repeated small transfusions. By this method, patients who would certainly have died have either been completely cured or their prognosis rendered less certainly fatal. Before undertaking the transfusion, a somewhat smaller amount of blood is withdrawn by venesection. The transfusions may be repeated every day if necessary. The usual treatment of the shock, etc., is also employed.—*American Journal of Surgery,* October, 1925.

Backache in Gynecology.

LYNCH (*California and Western Medicine,* July, 1925) as the result of a preoperative and follow-up study of 608 gynecologically operated cases, reports as follows: Sacral or sacrolumbar backache constituted a complaint in 48 per cent of 608 gynecologic cases, being found in 8 per cent of the ovarian tumors, 31 per cent of the fibroids, 46 per cent of pelvic inflammatory disease, 58 per cent of suspensions, 75 per cent of relaxed vaginal outlets, and 23 per cent of procidentia.

Backache may be ascribed to gynecologic pathology because it remained cured for periods ranging from one to eight years in 77 per cent of the 48 per cent of the 608 gynecologic cases that had this symptom.

Backache which was cured by gynecologic operation occurred in the following percentages of the cases that had this preoperative symptom: 100 per cent in ovarian tumors, 84.5 per cent in marked retroflexions, 81 per cent in extensive vaginal relaxations, 73 per cent in chronic pelvic inflammations, 68 per cent in fibroids, and 36 per cent in complete procidentia.

Backache in gynecologic conditions is due chiefly to pelvic congestion.

Orthopedic conditions were responsible for between 17 per cent and 23 per cent of the total number of backaches of the series.

Postpartum Hemorrhage.

MADDEN (*Long Island Medical Journal,* August, 1925) reporting on the records of the obstetrical service of the Brooklyn Hospital notes that, of nearly 4000 deliveries, postpartum hemorrhage occurred as a complication in 27—7 cases severe; 17 mild; 3 late. Of the late cases two occurred in a few hours, one on the eighth day. Madden notes that of the seven severe cases of postpartum hemorrhage only two occurred in patients treated according to the hospital routine, which is as follows: One ampoule of pituitrin is given hypodermically immediately after the second stage, thus getting a more rapid emptying of the uterus than is usual. This method of handling the third stage is particularly applicable to all cases terminated in a surgical manner. After the injection of pituitrin, it is very important to express the placenta with the first contraction of the uterus. This will in most cases occur three to five minutes after the injection, and should be watched for carefully. The idea is to empty the uterus as soon as possible and to keep it empty of clots.

The controlling of hemorrhage when it does occur is by the various means familiar to all, namely, keeping the uterus empty of clots, upward traction on the uterus, vaginal packing, and medicines such as pituitrin and ergot. For combating the general condition of the patient, elevation of the foot of the table, morphine, and clysis or blood transfusion if necessary.

The emptying of the uterus and lifting it up out of the pelvis will control cases of mild hemorrhage.

In the discussion of this paper Beach states that he gives only ½ cc of pituitrin immediately after the birth of the baby and does not express the placenta until there are definite signs of separation. With ½ cc he gets definite signs of separation, rising of the fundus, etc., on an average of seven to eight minutes after the delivery of the baby. He had but one postpartum hemorrhage in a series of 200 cases. In this one case the placenta was partially adherent. There was one case in which the placenta was retained for an hour or more, and it was supposed that this might have been due to the cervical contraction ring caused by pituitrin. Beach made an examination and found the internal os fully dilated, thus demonstrating that pituitrin had no influence in causing the retention.

Cisterna Puncture in Intracranial Hemorrhage of the New-born.

BRADY *(Journal of the Missouri State Medical Association,* September, 1925) notes that intracranial hemorrhage of the new-born is frequently overlooked, the cause of death being given as asphyxia, convulsions, atelectasis, and other conditions than that which really exists.

Ayer of Boston has reported 1985 cisternal punctures performed by fifty different men without a death which could be attributed to this operation.

Since the profession is coming to realize that if anything unusual occurs to the baby the first ten to fourteen days, intracranial hemorrhage must be thought of, more and more cases are being recognized. If the obstetrician notices that it is with difficulty the baby is made to breathe immediately after delivery, or will not nurse, is dopey and never brightens up, or if the baby is unusually restless and not only cries but screams, if there is puffiness about the eyes, if there are attacks of cyanosis and difficulty in swallowing, if the sutures are separated and the fontanelle bulging, and, finally, if convulsions occur, his first thought must be of the possibility of an intracranial hemorrhage. It is the quiet baby, difficult to arouse and unwilling to nurse, but whose symptoms never become stormy and who improves greatly at about the tenth or fourteenth day, that we are especially likely to overlook. The infant seems to do fairly well, the symptoms do not grow worse, and each day we expect the condition to improve, and it does. To perform any operative procedure we might be accused of being meddlesome, and just this kind of case the writer has seen develop the typical spastic cerebral palsy toward the end of the first year.

The idea of the operative removal of the clot was conceived by Cushing twenty years ago. Accounts in literature of the success of this procedure are few and far between. Any one who has opened the skull in these cases post mortem will readily see the difficulty of accomplishing anything by this operation. On the other hand, a number of infants with intracranial hemorrhage presenting ominous symptoms have been completely restored by the simple operation of lumbar puncture.

In tapping the cisterna, with the thumb one locates the spine of the axis; the needle then is directed upward and slightly forward. The depth to which one must pass the needle before puncture of the occipito-atlantoid ligament is best determined by the tactile impression. The interruption in bony continuity between the base of the skull and spine affords a rather large opening for the passage of the needle.

In the adult there is abundant space between the dura and the medulla, as shown by Ayer in frozen sections, the distance available to the needle depending on the obliquity with which it is introduced.

The question naturally arises as to the danger of damaging the medulla in the infant. Even in such small laboratory animals as the rabbit, guinea-pig, and rat, there is sufficient space to allow of puncture of the cisterna without inflicting damage on nerve structures. If on puncture bloody fluid flows from the needle, there are some who question whether one can be sure that this really comes from the subarachnoid space, believing a needle wound of a small vein may be responsible for the presence of the blood. When one sees a sudden and marked relief from all the symptoms with a prompt subsidence of a bulging fontanelle, there can be no question about relief of the intracranial pressure. In some punctures there are just a few drops of blood which trickle from the needle; such a result should always be questioned.

It is the belief of the writer that cisterna puncture is a valuable procedure in the diagnosis and treatment of intracranial hemorrhage in the new-born. Lumbar puncture should first be performed, and if it is not possible to remove sufficient fluid to cause a marked reduction in intracranial pressure, cisterna puncture should be resorted to.

Postoperative Parotitis.

RAND *(New Orleans Medical and Surgical Journal,* September, 1925) called attention to this complication following operation; comparatively rare, but if the total number of operations be considered, encountered in practically all large clinics. In former times it was supposed to be metastatic or due to direct extension along the parotid ducts. The frequency with which it is associated with gynecological operations suggests that there may be a relation between it and the sex glands, such for instance as is manifest by mumps.

The infection develops some days after operation and is characterized, at first, by swelling in the parotid region, a swelling which pouches out the lobe of the ear. In severe cases the tumefaction involves the whole side of the neck with the usual constitutional symptoms of an active infection and the appearance of extreme illness. The condition may subside without suppuration or may go on to diffuse phlegmon of the gland and surrounding tissues, or gangrene. Suppuration of the parotid gland is customary.

Therefore it is usual to practice incision comparatively early, especially if the constitutional and local symptoms be pronounced. Fluctuation indicating the seat is a late sign because of the tenseness of the parotid capsule. The incision must be so planned as to avoid the facial nerve, which is endangered almost as much by the incision as by the unrelieved tension of the active inflammation.

Though the direct etiology of parotitis cannot be definitely set forth the theory of direct extension from the mouth receives support from the circumstance that when after operations the hygiene of the oral cavity is carefully attended to these parotid infections rarely occur.

Treatment of Rhus Dermatitis with Poison-ivy Extract.

CLOCK *(Journal of the Medical Society of New Jersey,* September, 1925) observes that every one is to some degree susceptible to poison ivy, immunity of certain persons being one of degree only. Plants retain the poisonous property long after drying. Actual contact is needful to produce a dermatitis. The best form of prophylaxis is the free use of soap and hot water promptly after exposure, since the rhus poison requires some time before it penetrates through the epiderm. The active principle is a non-volatile resin. Clock has prepared a solution of the purified active principle in almond oil. This is non-toxic, non-irritating, and its injection does not cause severe reaction or pain. Because of its comparatively slow absorption full dosage is safe. In using this almond oil extract, if any be dropped on the skin it will cause typical rhus dermatitis. Almond oil extract is furnished in syringes which may be destroyed after use. It should be warmed to body heat before injecting. One

cubic centimeter of almond extract is said to give relief. In severe cases two or three doses may be required at intervals of twenty-four hours. Injections should be made intramuscularly, not intracutaneously. The deltoid muscle just below the shoulder is suggested as the best site.

The Control of Venereal Disease by Individual Effort.

BAYLY *(International Journal of Medicine and Surgery,* September, 1925) in an address before the Royal Institute of Public Health, as the result of his investigation bearing on the value of immediate self-disinfection as a means and method of preventing venereal disease, reports as follows: Questions submitted to 41 witnesses had to do with their opinion as to the efficacy of the method; as to the ability of the civilian population to carry on immediate disinfection; as to whether, if such knowledge were disseminated, it would or would not give a false sense of security, increase the number of risks taken, and augment rather than decrease the amount of venereal disease.

Of the 41 witnesses who appeared before the committee and of the 11 witnesses who wrote, those unfavorable to immediate self-disinfection have not had personal experience of the method of reducing venereal disease by individual effort, and their evidence not being first hand and being only expressions of opinion without any basis of personal practical experience, cannot be accepted as evidence from the legal or scientific point of view.

The author in summing up the evidence submitted in reply to these questions found that every one who had had personal experience in the prevention of venereal diseases by immediate self-disinfection was whole-heartedly in its favor as a valuable means of preventing these diseases. The only two witnesses who stated their disbelief in the value of disinfectants to civilians were neither purely venereal specialists nor had they had the opportunity of personal experience in the prevention of venereal disease by personal disinfection.

In answer to the question as to whether self-disinfection requires particular skill in men and women, there was almost unanimous opinion that immediate self-disinfection was much more difficult to carry out in women than in men, and that it could not be carried out by women unless a comparatively complicated apparatus and considerable quantity of disinfecting fluid was available. Miss Rout's evidence showed that in certain particular instances immediate self-disinfection in women is of value. As regards men, 13 considered that no particular skill was required, and six that skill was required. These six had little if any personal experience, and their opinions were based on theory rather than practice.

In reply to the question in regard to the relationship of alcohol and venereal disease, opinion appeared to be almost equally divided, the balance being slightly in favor of the conclusion that alcohol is not an important factor. Figures were produced by only two witnesses, Major Frost and Dr. Young, and these showed that alcohol appeared to be a very unimportant factor.

Syphilitic Uncertainties.

MAPES *(Urologic and Cutaneous Review,* September, 1925) states that in the consideration of syphilis the following pertinent and perfectly obvious, though apparently contradictory, facts cannot be disregarded:

That syphilis may exist despite a persistently negative Wassermann reaction. That syphilis may be non-existent despite a persistently positive Wassermann reaction. That there can be no constitutional syphilis without preëxisting chancre. That constitutional syphilis may not develop despite the presence of undoubted chancre. That syphilis d'emblée of the French is a mythical conception, an impossibility. That syphilis cannot always be diagnosticated by the character and appearance of the initial lesion. That syphilis may induce secondary manifestations so mild as to readily escape recognition. That there are no sharply defined or discernible clinical stages during the progress of syphilis. That in rerum naturæ there can be no such thing as inherited or hereditary syphilis. That, con-

trary to prevailing opinion, neurosyphilis may develop at any time following infection. That spontaneous cure results in about fifteen per cent of cases of proven syphilis. That syphilitic reinfection is an established fact.

Interglandular Associations.

HAMMETT *(Endocrinology,* July-August, 1925), on the basis of determining the specific size (weight) correlations of the incretory organs in normal subjects, using the statistical method of partial correlation as the analytical procedure, and the weights of the thyroid, thymus, adrenals, pancreas, gonads and hypophysis of male and female adult albino rats as raw data, attempted to determine whether or not the glands of internal secretion comprise a system of specifically interrelated organs. The glands were removed from 121 male and 121 female rats 150 days of age.

As a result of this study Hammett concludes that the stellar rôle hitherto held by the thyroid must be given to the adrenals. These structures are positively and specifically correlated, at the usual level of thyroid activity, with all of the other glands of internal secretion, save the hypophysis in both sexes. The presence of such association between adrenals and gonads establishes the hypothesis of Riddle and his coworkers of a functional relationship between the two organs on a firm and exact basis.

Similarly, the finding that the adrenals and thymus are specifically correlated in their weight relations substantiates the opinion of Jaffe that these two structures are united in some sort of a functional association.

Although the incretory organs studied in this investigation are not directly specifically interrelated as a group, nevertheless several of the directly non-related pairs can be considered as indirectly associated through the intervention of a third member. The major mediating influence in this indirect association emanates from the adrenals. These glands are apparently the pivotal organs on which depend the interglandular associations. They appear to be partial determinants of the degree of association between various pairs of other incretory organs, and hence are collators of some of the interglandular activities. The conclusion is justified that the adrenal glands are an integrating agency binding together certain of the other incretory structures into an associative size relationship.

This influence is more general and more specific in the female than in the male. The degree of association is also closer in the former than in the latter. These facts, taken in conjunction with the finding that the adrenal-ovary correlation is considerably greater in degree than the adrenal-testis, indicate that adrenal domination of the endocrine system is more far-reaching and more intensive in the female than in the male.

In view of the fact that interglandular weight relations are largely conditioned by adrenal influence, it is not too much to suppose that the same holds true of the functional interrelations, at least in so far as quantity output is concerned. If this assumption is correct, it is probable that the glands of internal secretion, as a group, are no more directly and specifically interrelated in function than they are in size.

Diverticula of the Colon.

THOMAS and JEWETT *(Clifton Medical Bulletin,* October, 1925) quote Virchow as having described colonic diverticula in 1853, and as having recognized the fact that an inflammation may originate in these pouches. It is only within recent years that the clinician has been convinced that the condition is anything more than a medical curiosity.

Twenty-seven cases are tabulated, in three groups according to the chief complaint. In the first group are four cases in which there was a sudden onset characterized by acute pain in the lower abdomen, in two located in the left lower quadrant, and in two in the pelvis, and all showing marked tenderness. There was a rise in temperature and

leucocytosis in three. The symptoms were not unlike those seen in acute appendicitis, except for the location of the pain. In three of this group there was a mass which was resected; in two instances under the impression that it was a neoplasm. This same error is reported in more than one paper. Three of the four patients died, one making a complete recovery, but only after a long illness.

In reviewing these results it is not difficult to concur with the opinion of surgeons who advise conservative treatment.

The second group is composed of twelve cases, all of whom laid emphasis on an abdominal condition in stating their chief complaint; while a third group of ten laid more stress on other conditions.

In the last two groups the diagnosis was made by *x*-ray in nineteen and at autopsy in three.

Of the cases observed 18 were females and 8 males. This finding is at variance with the published reports, almost all of these stating that the majority of cases occur in males.

Constipation and obesity are common symptoms; more than half the cases gave a history of constipation, more than three-quarters were over weight.

Sixteen (including the four acute cases) laid stress on the abdominal symptoms in giving their chief complaint, while in every case abdominal signs or symptoms were brought out in development of the history or on physical examination.

There was definite pain in 63 per cent, and 70 per cent of these located the pain in the lower abdomen or on the left side. In 51 per cent there was tenderness at the time of examination.

In eight cases a previous diagnosis of gall-bladder disease or chronic appendicitis had been made, and in five of these operations had been performed for one or the other of these conditions.

While diverticula may occur in any portion of the gastrointestinal tract, it is only in the sigmoid flexure that we see them acutely inflamed. Thomas and Jewett's four cases which came to operation tend to confirm this statement. There seems to be almost unanimity in the opinion that the cases with acutely inflamed diverticula should be treated conservatively as the mortality of those coming to operation is high.

In the chronic cases the chief aim is to prevent, if possible, acute inflammation of the diverticula, and this is best accomplished by treatment for the chronic constipation. The disease according to most observers is not progressive.

Reviews

EXPERIMENTAL INVESTIGATIONS INTO THE EMOTIONAL LIFE OF THE CHILD COMPARED WITH THAT OF THE ADULT. By Helga Eng, Oslo, translated by George H. Morrison, M.B. (Edin.) Oxford University Press, 1925. Price $6.50.

The problem which is the subject of investigation by the author is stated as follows: "First, to find out whether psychical experiences of a definite character were accompanied by definite changes in the volume-pulse curve and in the respiratory curve; and second, to ascertain whether the vasomotor and respiratory changes which were found in adults were also exhibited in children; or whether the changes of the volume-pulse curve and of the respiratory curve in children possessed some specific quality which might indicate a corresponding feature peculiar to the child's emotional life."

The investigation embraced studies made with the plethysmograph and the pneumograph. Unfortunately the author makes the statement in the very beginning that the problem must be considered from the psychological point of view and that the physi-

ological cause of the variations is a matter of relatively little moment from a psychological standpoint. This in the opinion of the reviewer is the besetting sin of modern psychologists. Psychology cannot be separated from physiology. It is indeed itself but a department of physiology. If not, why make these elaborate studies in the change of volume of the limbs and of the activity of the respiratory apparatus, changes which, judging from the author's results, accompany all exercise of mental functions?

The studies were carried out with eleven children and fourteen adults, and required the expenditure of much time, thought, and painstaking care. The results may be briefly summarized as follows: "All the processes of attention, such as voluntary attention, involuntary attention, and tension, have the following concomitant phenomena: falling volume curve, decrease in pulse height, retarded pulse, retarded respiration. The concomitant phenomena of psychical work are: rising volume curve, increase in pulse height, accelerated pulse, accelerated respiration. These are also found along with spontaneous psychical work. Voluntary effort of attention and psychical work are not one and the same psychical process, as has been supposed; they are two different processes with contrasting symptoms; but as psychical work is always accompanied by the effort of attention, the phenomena of attention can appear alongside the phenoma of psychical work and may completely or partially obscure the latter. Displeasure and depression are, it would appear, accompanied by low volume curves, low, weak and retarded pulse, and retarded respiration. Pleasurable stimuli appear to be accompanied by rising volume curve, increasing pulse height, retarded pulse, accelerated and shallow respiration. The studies also embrace the phenomena accompanying spontaenous pleasure emotions, intellectual emotions, and the esthetic emotions. Differences, of course, are noted as to whether displeasure is brought about by sensations of pain or unpleasant taste sensations, or by a particularly displeasurable emotion such as fright. This is perhaps what we would be led to anticipate."

Regarding the differences between the emotional life of children and that of adults, "all the experiments in which stimuli were employed show the same result, that with regard to expression changes which accompany the emotions raised by stimuli there is no difference to be seen between children and adults. The same phenomena appear with the same regularity in children as in adults.

"In the spontaneous curves where the changes are caused by free personal psychical activity the matter is otherwise, for here the characteristic differences between children and adults come into play. While adults show a goodly collection of displeasure curves, spontaneous displeasure emotions are very rare in children. With adults the displeasure emotions are usually of much longer duration, and are related to more important events, and have a personal psychic content. The concomitant phenomena of spontaneous displeasure emotions are the same in children as in adults, but, as is seen on measuring the curves, the strength of the displeasure phenomena is never so marked in children as it often is in adults."

For the details of the author's conclusions the work itself, of course, must be consulted. The results are most interesting and worthy of very careful study and analysis. However, as before intimated, in the opinion of the reviewer, these results must all be interpreted on physiological grounds and on these only. A so-called "psychic or psychological" interpretation is practically meaningless. It would appear that the mental phenomena which are accompanied by heightened intellectual or emotional activity are accompanied by heightened reactions both as regards the pulse volume curve, *i.e.*, of the circulation, and by a heightened activity of the respiration; while depression and displeasure of all kinds are accompanied by a lessening of these physiological activities. While the results of the author are very interesting, they must be regarded as incomplete, although complete studies of

the physiological reactions accompanying mental processes present difficulties which are probably insurmountable. Theoretically they should embrace the reactions revealed by the autonomic nervous system and by the sympathetic nervous system proper. This would embrace a study of the pupilary phenomena which are most interesting and most striking, and the study of which is habitually neglected. They should embrace not only studies of the innervation of the cardiovascular apparatus, but also of the variations in the gastrointestinal innervation. It is exceedingly probable, for instance, that during periods of heightened intellectual and emotional activity the innervation of the gastrointestinal tract is lessened and perhaps, in extreme conditions, almost brought to a standstill. Further, a plethysmographic study yields a very imperfect picture of the play of the cardiovascular apparatus. Direct heart studies should themselves be included. How far this is practicable, it is of course impossible to say, but their great relative importance cannot be gainsaid. In addition, the rise and fall of muscle tone, *i.e.*, the tone of the voluntary muscles, should also be studied. There is reason to believe, for instance, that with a reduction of cortical activity there is a rise of muscle tone due to a diminished inhibition of the motor structures of the brain-stem, *i.e.*, of the paleoencephalon, and also corresponding changes in the reflexes. Finally, both intellectual and emotional activities are unmistakably connected with variations in the internal secretions. We all know the relation which fright and anger play in the activities of the adrenals and in the production of sugar, and that endocrine changes, slight or pronounced, take placé corresponding to the play of the intellectual and emotional activities is extremely probable. It is, of course, not practicable as yet to measure all of these factors in a study of the intellectual and emotional reactions, but in any event the facts in our possession point out clearly that the interpretation, whatever the results, must be physiological and not "psychological." F. X. D.

AN INTRODUCTION TO OBJECTIVE PSYCHOPATHOLOGY. By G. V. Hamilton, M.D. With a foreword by Robert M. Yerkes, Ph.D., LL.D. The C. V. Mosby Co., publishers, St Louis, U. S. A., 1925.

The volume before us approaches the subject of practical psychology from a rather novel standpoint. In his introduction, Dr. Hamilton points out that the surgeons without realizing it long ago pointed the way to a successfully objective method of dealing with mental responses, and then cites the instance of appendicitis in which the pain is a purely mental response, but that at the same time the attack is accompanied by a physical response; thus the surgeon experiences the rigidity of the belly muscles by using his finger-tips. There are present therefore two reactions, the characteristic pain symptoms and the rigidity of the belly muscles, together with other phenomena such as the increase of the white cells of the blood. Dr. Hamilton further states that shortly after he began the study of comparative psychology under Professor Yerkes at Harvard in 1905, it occurred to him that although the abnormal mental responses of nervous patients cannot be dealt with as physical things, the stimulations which evoke them and the responsive properties (reactive tendencies) of the organism which determine the specific nature of such responses may profitably be dealt with as physical, objectively measurable things. He further points out that this very procedure had long been followed in surgery and was now being followed in the laboratory of animal psychology at Harvard, and that he was encouraged to assume that it would pay to follow it in an effort to lay scientific foundations for an objective psychopathology. "If the surgeon may profitably and legitimately assume that mental responses of appendicitis are traceable to the nature of the offending stimulations and to certain responsive properties of the body, why may not the psychopathologist assume with equal profit and legitimacy that the nervous patient's morbid fears or similarly hurtful mental responses are due to appropriate physical stimulations and to

responsive properties of the physical bodies?"

The problems which the author places before him, he summarizes as follows:

1. To isolate a few of the more important types of situations to which the nervous patient is apt to respond abnormally.

2. To subject various mammalian species to such stimulations, to study their methods of response thereto, and to isolate, if possible, responsive properties (reactive tendencies) which are common features of organization in the human species and in various infrahuman mammalian species.

3. To include children and adult human subjects in comparative studies of behavior.

4. Once a given reactive tendency has been isolated, to explore for the principles which govern its modification by experience.

The author then outlines his general method and gives in greater or less detail the records of two hundred nervous cases.

In the summary of his results, he divides the cases into those (*a*) presenting pathologic type of reaction to stimulations which evoked adjustments of the organism as a whole, and (*b*) neurological and other cases in which there were no significant pathologic reactions of the organism as a whole.

The second part of the work is devoted to the principles of objective psychopathology. This part is ushered in by an Introduction in which it is stated that it is one of the objects of the book to persuade the internist that he need not depart from the fundamental methods, concepts, terminologies and sense-organ orientations of the natural sciences in order to employ the same degree of scientific purposefulness in dealing with his nervous patients that he employs in dealing with all other classes of patients. It is this which really constitutes the essence of the book. Purely speculative psychology occupies a very limited place in it, if at all.

It is impossible in the course of a brief review to give an adequate conception of the manner in which the author presents his problems. Suffice it to say that his method is most interesting and illuminating. In due course he considers the foundations of psychopathology, embracing a discussion of neural morphology and neural physiology; endrocrinology and behaviorism. Next follow studies of comparative reactions to baffling disadvantages, habit formation, the relation of inhibition of responsiveness to indirect responsiveness, and other topics such as unsatisfied major cravings, reactions to inferiority, and sexual behavior. While he does not hesitate to give Freud a full measure of credit for following the clues contained in dreams, unaccountable phobias, critical panics, hysterical paralysis, etc., the author expresses himself very sanely as follows:

"The psychoanalytic concept of sublimation, by confusing direct responsiveness to cravings for all sorts of non-sexual satisfactions with indirect responsiveness to inhibited sexual urges, has encouraged literary opportunitists who take their cues from psychoanalytic literature in stressing the all-importance of the sexual instinct and of sexual satisfactions, often, probably, because this is in line with their own inclinations, but in many cases because they have been misled. If the uprising generation is told that thriftily saving money or defending the property rights of others or inventing new things or attacking evil customs are mere sublimations of psychical energies which were initially directed toward obtaining the satisfactions derived from anal eroticism, imaginary father-castrations, incestuous activities, demonstrations of sexual virility and finally achieved heterosexual successes, they will have, it seems to me, a very poor philosophic substitute for a truly biologic outlook on life."

In conclusion the reviewer should emphasize the fact that the book is, to say the least, worthy of very careful study and perusal. It is a distinct and most suggestive departure from the ordinary neuropsychiatric interpretation of nervous cases. The work also bears a well-deserved laudatory foreword by Robert M. Yerkes.

F. X. D.

LE TRAITEMENT DU DIABÈTE. By Marcel Labbé. Masson & Co., Paris, 1925. Price 8 fr.

Professor Labbé, of the Faculty of Medicine in Paris, has published a small handbook of 150 pages, which in many respects corresponds to similar handbooks prepared during the last two years by American practitioners, earlier ones, of course, being completely substituted by the introduction of insulin in treatment. He deals with the onset of diabetes, its physiology, the accidents which complicate it, the manner in which such patients should be investigated, and the treatment, naturally emphasizing the matter of diet and explaining the needs for the application of insulin and the results which are obtained. A very considerable number of receipts applicable to diabetes so far as diet is concerned are included. In the old days some of the information given as to the sugar content of certain wines and other potable liquids would have been of very considerable value to practitioners in this country and of course will prove interesting and useful to the French readers or physicians in other countries which have not fallen under the prohibition laws.

In this little book Labbé not only treats the diabetes alone, but considers the relative importance of biliary complications, lesions of the liver and kidneys, discusses thyroidal and acromegalic diabetes, and also takes up the treatment of the lesions in the skin which are sometimes so troublesome in diabetic patients.

THORACIC SURGERY. The Surgical Treatment of Thoracic Disease. By Howard Lilienthal, M.D. In two volumes, illustrated. The W. B. Saunders Company, Philadelphia, 1925. Price $20.

It is generally recognized that Lilienthal is the leader in thoracic surgery in this country, and, therefore, surgeons generally will recognize that in this book they will find not only the results of wide experience, but also an excellent presentation of the work of other thoracic surgeons.

The volumes are not written solely by Lilienthal, but contain the writings of a number of other authors, notably Graham of St. Louis, who writes on the Physiology of the Chest; Jaches of New York on The *X*-Ray Examination of the Chest; Ottenburg of New York on Blood Transfusion; and Dr. W. C. Lusk upon the Intravascular Treatment of Aneurysm with Gold Wire and Galvanism. So, too, the chapter in the second volume upon Pulmonary Tuberculosis is contributed by Amberson and Peters of Loomis, New York.

It is not possible for us in the space which can be devoted to book reviews to make a note of all the interesting material which these volumes contain.

A host of *x*-ray pictures and thirteen colored illustrations, as well as outline drawings, illustrate the text.

The more recent methods of treating empyema by water-seal drainage are well discussed. This is a subject with which every practitioner who ever thinks of "tapping" the chest ought to be familiar.

The methods described for the treatment of aortic aneurism are quite different from those which we believe will often give better results. In the first place we do not think that insulating a gold needle with japan provides sufficient insulation to prevent the danger of some of the current producing an electrolytic burn where the needle goes through the chest wall. It is much better that the gold needle shall be insulated by porcelain. Again, the direction that the wire which is used should contain not only gold and platinum, but also silver and copper, is, we think, an error since the copper is very apt to be removed from the wire by the electric current and may result in the wire breaking off at an unfortunate time. The silver also diminishes the temper of the wire which is obtained by introducing the platinum. Again, the advice is given that the needle shall be introduced not into the part of the aneurismal swelling which is protruding most, or seemingly the thinnest area, but elsewhere. Our experience leads us to believe that the contrary is true, since operating upon the thinnest area has never resulted in an accident and manifestly is designed to form a clot in the area which is

most in danger of giving way. Again, the directions are given that the current should be taken through a rheostat from the illuminating system. We believe that this is not a safe procedure, as there is always the possibility of some breaking of the current, and unless the table upon which the patient lies is thoroughly insulated and the operator and his assistants use rubber-soled shoes there may be danger of "grounding." It is much better to derive the current from a number of ordinary dry-cell batteries. The advice, too, that 100 milliamperes should be employed we believe is erroneous. Clotting can readily be induced by 50 milliamperes, and more than this may result in practically cooking the contents of the sac or the nearby tissues.

In the treatment of pulmonary tuberculosis by pneumothorax, adequate credit is given to Forlanini and Murphy, and also to those who have employed this method largely since their time. The wise advice is given that pneumothorax is never to be substituted for routine hygienic treatment, and the statement is further made that patients with pulmonary tuberculosis must look upon their disease as a lifetime handicap regardless of the type of treatment that they have undergone. Copious references are given in this chapter to the best writings on the subject and definite directions are given as to the type of cases in which pneumothorax should be induced.

There is an interesting chapter upon operations upon the phrenic nerve and their application to thoracic disease, with definite directions as to how the nerve is to be approached, dissected loose from adhesions, or, in certain cases, excised. We note with interest that avulsion of the nerve seems to be free from operative accident. It used to be thought that such a procedure was most dangerous and might result in death, but as was pointed out many years ago in a Cartright Prize Essay of Columbia University, section of the phrenic nerves may be performed in all animals without inducing death through paralysis of the diaphragm, since the other respiratory muscles are capable of maintaining necessary respiration. It is pointed out that the phrenic nerve may be injected with alcohol, after exposing it, for the relief of obstinate hiccough, and also that phrenicotomy may be resorted to for the cure of intense and lasting pain in certain cases of phthisis with adhesions to the diaphragm. Such patients may also be relieved when suffering from severe pain in the shoulder, and Kroh is quoted as having found complete restoration of diaphragmatic function five months after operation.

The concluding chapter in Volume II deals with military thoracic surgery, which made wonderful advances during the Great War.

This publication may be considered as marking an epoch in the literature of surgery. The physician as well as the surgeon will have a far better conception of the anatomy, physiology, pathology, and therapeutics of thoracic disease if he will peruse its pages.

INTRAVENOUS THERAPY. Its Application in the Practice of Medicine. By Walton Forest Dutton, M.D. Illustrated; second revised and enlarged edition. The F. A. Davis Company, Philadelphia, 1925. Price $6.

The text of this volume is divided into two parts, the first of which deals with the general technique of intravenous therapy and is large enough in its scope to cover venesection, transfusion direct and indirect, intravenous therapy in children, the technique of giving the arsenicals, and intravenous anesthesia. This part of the volume covers 199 pages. The greater part is devoted to intravenous medication for various diseases, extending all the way from actinomycosis to yellow fever, the text being arranged alphabetically. There is also an appendix containing rules for comparing thermometric scales, tables of approximate measures and for making solutions, with additional information as to the method of converting apothecary weights into the metric system. There is also a dose table. Altogether 52 illustrations are included designed to show blood-vessels which lend themselves to injection and to aid in describing the various forms of apparatus

which experience has shown to be most advantageous both for transfusion and for the intravenous injection of drugs.

We find a description of Lindemann's cannulæ, of Percy's apparatus, and of Dutton's own apparatus, but we fail to find one illustrating that of Unger. Some of the illustrations are definitely original and others are credited, notably to Carrel and to Kolmer.

As our readers well know, intravenous injection, which was almost never resorted to twenty years ago, has become quite popular with some practitioners. Aside from the use of arsphenamine in the treatment of syphilis, we believe that it has a relatively limited range of usefulness, and that unless the greatest possible care is exercised there are certain possibilities of danger which cannot be minimized. We are inclined to think that intravenous injections are possibly not as popular as they were five years ago, but in this we may be mistaken. However this may be, any physician who is inclined to resort to this form of therapy, and undoubtedly it is definitely advantageous in certain cases, will do well to purchase Dr. Dutton's book, because he will find it a practical and reliable guide.

LES MÉDICAMENTS CARDIAQUES. By L. Cheinisse. Masson & Co., Paris, 1925. Price 14 fr.

The design of the author of this book on Cardiac Medicaments is to present not only his own views, but by frequent quotations from other authors to present the views of others. He divides his text into nineteen chapters. Naturally his first chapter deals with digitalis, but covers only twenty pages. In this chapter he considers the indications and contraindications and the various derivations which are commonly used in France. In chapter two he discusses strophanthus and nearly related drugs, with special reference to their intravenous administration, and then goes on to consider squill, sparteine, adonis vernalis, apocynum, chloride of calcium, and caffeine. There is also a chapter devoted to the intravenous injection of hypertonic glucose solution and another upon camphorated oil as a cardiac stimulant. Adrenalin, atropine, eserine, quinine and quinidine are also considered. There is also a chapter upon glandular treatment in cardiac affections. The last chapter deals with intracardiac injections, and the substances so employed are pituitrin and adrenalin.

Unlike many French works, references are made to both American and English literature quite frequently.

That quinidine is a cardiac depressant and ought to be used with great caution or not at all in the presence of myocardial degeneration is recognized. Of its value in cases of circulatory failure the author expresses considerable doubt. In most instances, in our experience, cardiac irregularities can be controlled nearly as well by quinine as by quinidine without any of its dangers.

INSECTS AND DISEASE OF MAN. By Carroll Fox, M.D. Illustrated. P. Blakiston Son & Company, Philadelphia, 1925. Price $4.

The author tells us that he has attempted in this volume to gather together in a concise and practical way the information necessary for a student taking up the study of medical entomology, or for the health officer working in the field of preventable diseases transmitted by arthropods. Knowing that much of the literature is to be found in separate articles, he has sorted them out and embodied the results of his research in the present text. He tells us frankly that he has not hesitated to draw upon the writings of a large number of well-recognized entomologists.

The author is a surgeon in the U. S. Public Health Service and a lecturer on medical entomology to student officers in the Hygienic Laboratory in Washington.

The book contains a little over 300 pages and is divided into 37 chapters. The first 22 chapters deal with the various insects capable of transmitting disease, and also with the various rodents, notably the rat. In the second part of the book he deals with the diseases themselves, such as malaria, yellow fever, dengue, trypanosomiasis, typhus, plague, Rocky Mountain spotted fever, and the other maladies nearly related

to them in the sense of the manner of their transmission, and the maladies that are more rarely met with either in this country or in the Orient.

We think, after looking over the author's pages, that he might well have stated that in preparing the text he had in view its use not only by health officers and medical students, but as part of the course of instruction in what are now known as the premedical years, and we would suggest that the publisher make an effort to see that this book is adopted by teachers of premedical students, since at one and the same time it will give such students an excellent course in biology and stimulate them in showing how interesting the investigation of disease may be. As a general rule, premedical studies are of such a nature that the student fails to see the bearing that they may exercise upon his subsequent education. This book is an admirable one as showing that the demands made upon him are not arbitrary but intended for a definite purpose.

LA TUBERCULOSE PULMONAIRE, Etude de Phtisiologie Clinique et Sociale. By Léon Bernard, Professor of the Faculty of Medicine of Paris and Member of the Academy of Medicine. Second edition, entirely reset; Volume I. Masson & Co., Paris, 1925. Price 28 fr.

The first edition of this book, which, as its title indicates, deals with pulmonary tuberculosis from both the clinical and social standpoint, was so rapidly exhausted that a second edition has been called for. It is a paper-bound volume containing 400 pages with 15 figures. Several of the chapters deal with rather novel themes, as, for example, that upon tuberculosis and legal measures for its control. Adequate discussion is carried out in regard to sanitarium treatment and the protection of infants and children against infection which in later life may become active. So, too, the influence of alcoholism in relation to tuberculosis is considered. Climatic cure also receives attention, as would naturally be expected. An interesting and important chapter is that devoted to enlargement of the mediastinal and peribronchial lymph nodes, a subject which has received very little attention so far by general clinicians. The associated bronchitis which is often an important factor in pulmonary tuberculosis has also been considered.

The first portion of the book deals with the acute and subacute forms of pulmonary tuberculosis and the statistics as to the cutaneous reactions, positive and negative, when tuberculin is employed.

CHEMICAL PATHOLOGY. By H. Gideon Wells, Ph.D., M.D. Fifth edition, revised and reset. The W. B. Saunders Company, Philadelphia, 1925. Price $8.50.

That five editions of a book first published in 1907 should have been called for when dealing with so highly technical a subject is a tribute not only to the skill of the author, but to the desire of the profession to keep fully abreast of the advances which are made in medical science. It will be recalled that the author discusses general pathology from the standpoint of the chemical processes involved. He divides his text into twenty-six chapters, the first dealing with the chemistry and physics of the cell; then he deals with enzymes, followed by a consideration of the chemistry of bacteria and their products. After this he takes up the chemistry of the animal parasites and that of antigens and antibodies, with a study of the chemistry of immunity reactions. In his eleventh chapter, hemolysis is discussed. In the thirteenth chapter he deals with inflammation, phagocytosis, and the phenomena of suppuration, and then takes up the chemistry of growth and repair.

Perhaps the most important chapters for the general practitioner are those dealing with disturbances of the circulation and those of the blood, edema, and retrogressive changes, such as necrosis, gangrene, and parenchymatous degeneration. There are also chapters upon concretions and incrustations, upon pathological pigmentation, and upon the chemistry of tumors.

Another chapter of interest to the general practitioner is that upon gastrointestinal autointoxication so-called, and that which

considers the chemical pathology of the ductless glands.

The difficult theme of uric acid metabolism and gout is discussed in chapter twenty-five in the space of sixteen pages. Forty pages are devoted in the final chapter to the chemistry of diabetes.

A great wealth of references to important contemporary literature is found throughout the volume, in many instances a large part of a page being devoted to references which are germane, to which references are often added excerpts from the writings which are quoted.

A very large proportion of the medical profession we believe has no conception of the advances which have been made in this department of medical learning, and while this volume is rather appalling as to its size for the busy practitioner, he can abstract for his bedside work much exceedingly valuable information. We expect to turn to it often for assistance not only in medical knowledge, but in clinical work.

SUBMUCOUS ENDOCAPSULAR TONSIL ENUCLEATION. Being Excerpts from the Clinic of C. C. Miller, M.D. The Oak Printing and Publishing Company, Chicago, 1925.

The design of the text in this small volume is to present the advantages which Dr. Miller believes to exist in the operation for tonsillectomy which he has formulated. Amongst other advantages he claims that the base membrane and peritonsillar connective tissues are left as a protective against infection; that he avoids all injury and exposure of the musculature of the soft palate and pharyngeal wall; that the danger of hemorrhage is practically eliminated, that healing occurs rapidly, that atrophy of the pillars and other soft structures does not occur, and that the voice in singing and speaking is not altered. Numerous illustrations indicate the methods which the author pursues as well as the anatomy of the parts which have to be taken into careful consideration when tonsillectomy is being performed. Details are given as to postoperative treatment extending as far as blood transfusion in cases which suffer from hemorrhage.

A TEXT-BOOK OF MEDICAL DIAGNOSIS. By James M. Anders, M.D., Ph.D., LL.D., and L. Napoleon Boston, A.M., M.D. Third edition, copiously illustrated. The W. B. Saunders Company, Philadelphia, 1925. Price $12.

In the preparation of the third edition of Anders and Boston's Medical Diagnosis, so many changes were found necessary that the type has been entirely reset. The work at present, including the index, covers 1422 pages, and this gives some conception of the thoroughness with which the authors have expressed their own views and those of others in the subjects of which they treat. Indeed, in some respects the work may be considered a Practice of Medicine, save that the paragraphs devoted to treatment are not included. Thus in the article on Anterior Poliomyelitis a table is given showing the coincidence of this disease and the death-rate amongst domestic animals. Ordinary laboratory methods are included as well as those which fall in the realm of physical diagnosis. Frequently, parallel columns are employed to make a clear differentiation between the diseases which may somewhat resemble one another. The illustrations to which we have already referred are well chosen as illustrating the text. Adequate space is devoted to the maximal points of referred and associated pain upon the head and body, a theme which has been so well worked out in England by Head. The book to-day is undoubtedly the most exhaustive and complete one on Diagnosis in the English language.

THE NORMAL DIET. By W. D. Sansum, M.S., M.D. Illustrated. The C. V. Mosby Company, St. Louis, 1925. Price $1.50.

Dr. Sansum is Director of the Potter Metabolic Clinic in the Santa Barbara College Hospital, Santa Barbara, Calif. His design is to afford a simple statement of the fundamental principles of diet for the mutual use of physicians and patients. Altogether his text, including a bibliography, covers less than 75 pages and deals with the caloric requirements of the human body, its protein requirements, its bulk requirements, its mineral and water requirements, and last of all the need of vitamins. To write a book which will be satisfactory

for the mutual use of physician and patient is a difficult task since so brief a contribution will hardly meet the needs of the physician and may possibly give the layman conceptions in regard to his diet which may be erroneous.

THE THERAPY OF PUERPERAL FEVER. By Privatdozent Dr. Robert Koehler. American edition, prepared by Hugo Ehrenfest, M.D., F.A.C.S. Illustrated. The C. V. Mosby Company, St. Louis, 1925. Price $4.

In the preface to the American edition, emphasis is laid upon the many efforts which are being carried on to reduce what the translator calls the appalling death-rate from puerperal infections. It was a recognition of these dangers that led the translator to place before American physicians the opinion of Koehler of Vienna, with the further idea that no work dealing specifically with the problem of puerperal infection has been presented to English-speaking physicians in the last fifteen years. During this time many of the older therapeutic measures have proved utterly futile, whether they have been medicinal or surgical.

The first chapter deals with the protection of the patient and the second with prophylactic immunization. In the third chapter general therapy for infection is discussed, and after this local therapy. More radical measures, as represented by surgical interference, then follow. In the chapter devoted to the medicinal treatment of general infections, bichloride, mercurochrome, quinine and its various derivatives, iodine preparations, etc., are given adequate consideration, as are also the silver preparations.

Under the head of Chemotherapy, the various aniline dyes and their compounds are discussed, and in this chapter protein therapy, vaccines, serotherapy and arsenical preparations are given due attention. Temperature charts are introduced to illustrate the reports of actual cases, the details of which are frequently given.

The author does not believe that those compounds which are used as antiseptics really act in this manner, but rather by the production of a hyperleucocytosis. Given intravenously it is a question whether the substances remain long enough in the blood to be definitely bactericidal, and when given subcutaneously or intramuscularly the chance of their doing good seems even less probable. It is interesting to note that the author not only includes charts which illustrate the beneficial effects of certain lines of treatment, but also others which serve to illustrate failures.

ON WRITING THESES FOR M.B. AND M.D. DEGREES. By Sir Humphry Rolleston, Bart., K.C.B., etc. John Bale and Danielsson, London, 1925. Price 1s.

This brief statement of what Sir Humphry believes to be essential in the preparation of a thesis for a degree is excellent, but will not appeal to many undergraduates in this country because theses are almost never required for the degree of Doctor of Medicine in America. In the olden days a thesis was always required, but was probably cut out of the necessities of graduation by virtue of the fact that nearly always it was simply the reiteration of the text which could be found in well-known books of reference. Sir Humphry points out that a thesis must contain evidence of research of some kind or another, that the research should be original, and, if possible, a practical one in some problem of clinical medicine, pathology, bacteriology, or biochemistry.

IMMUNISATION LOCALE PANSEMENTS SPÉCIFIQUES. By A. Besredka, Professor in the Pasteur Institute. Masson & Co., Paris, 1925. Price 20 fr.

Professor Besredka is known all over the world for his work in immunology and particularly amongst general clinicians because of the so-called Besredka Test, designed to determine whether a patient may receive antitoxic serum with little or no danger. In a volume of about 250 pages he deals with the infections which are commonly met with as local lesions, but which nevertheless may become general, such as staphylococci and streptococci and dysentery, the various typhoid infections, and then with the subjects of natural and acquired immunity. The text is divided into chronological sequence, the first chapter dealing with the period from 1860-1920 and then with a period from 1921-1925. There is a curious failure to recognize the work which has been

carried out by English-speaking bacteriologists. Indeed the volume may be said to be almost solely concerned with the work of the French. It is quite true that they have been active since the days of Pasteur, but the work of men of other nationalities can scarcely be properly excluded.

APPLIED BIOCHEMISTRY. By Withrow Morse. Copiously illustrated. The W. B. Saunders Company, Philadelphia, 1925. Price $7.

Professor Morse occupies the chair of Physiological Chemistry and Toxicology in the Jefferson Medical College. He has given us a book of more than 950 pages, including the index, printed in large type and heavily leaded, containing many footnotes with references and further information in regard to important matters in the text. He has also introduced the innovation of including pictures of the men who have made noteworthy contributions to biochemistry. Seventeen chapters make up the text, which naturally deal, first, with fundamental preparations in biochemistry, then with the glucids, lipids, and protids, then with the chemistry of common foods, with their digestion and absorption, and lastly in connection with this subject, intermediate metabolism. Then follow chapters upon nutrition from the chemical standpoint, the excretions of the body, the methods for the determination of blood constituents, and metabolic studies of blood and urine.

We are unable to determine because of lack of knowledge whether other biochemists will conclude that this book, by reason of its thoroughness, should supplant other works of an earlier date. Its wide scope leads us to believe that only parts of it should be required in the studies of undergraduate students.

As an active teacher, the author knows how to put things in a way which is easily understood by those who have not the special training which he has acquired. The method by which the publisher has put together the text from a typographical standpoint is so attractive to the eye that it will be a material help in making the book popular.

THE SURGICAL CLINICS OF NORTH AMERICA. Vol. V, No. 4. Chicago Number. W. B. Saunders Company, Philadelphia and London, 1925.

This number will be of interest to surgical specialists in its presentation of usual and unusual cases with profitable discussions.

Bevan takes up the surgery of the spleen from the standpoints of selection of cases and technique of the operation. He presents a patient with hemolytic icterus and one with early splenic anemia, in both of whom splenectomy is done. In his opinion removal of the spleen is not worth while in leukemia and pernicious anemia. Carl Beck presents two cases—sarcoma of the skull, probably the result of traumatism, with metastasis; and metastatic abscesses of the brain. Pennington treats anorectal fistula by excision and immediate suture and in selected cases has used with benefit injection of bismuth paste. Tuberculosis of the mouth is reviewed and a case presented in which the infection was secondary to a lesion in the lung. David Straus believes that kinks of the neck of the gall-bladder may be the cause of colic although the organ appears grossly normal, and that it is an indication for cholecystectomy. The subject of urethral stricture is discussed in a common-sense and practical manner by Eisendrath, and the operations of internal and external urethrotomy are properly discarded in favor of more conservative measures. In discussing the treatment of peptic ulcer Gatewood proposes an answer to the question, What does gastroenterostomy do? Edmund Andrews describes a method of cure for oblique inguinal hernia by simple repair of the internal ring. There is a brief preliminary report of sixteen cases of spastic paralysis operated on by Royle of Australia. There are case reports of gas bacillus infection following operation for gangrenous appendicitis; of sarcoma of the duodenum and stomach, carcinoma of the pylorus, fractures and dislocations, mediastinal tumors, ulnar palsy, axillary aneurism, hour-glass stomach, cholecysto-duodenal fistula, superficial vascular tumors, stenosis of the vagina with pregnancy, physiopathic contracture of the wrist, and chronic duodenal stasis relieved by operation.

Notes and Queries

A Correction as to Oil of Lavender.

In the October issue of the THERAPEUTIC GAZETTE there appeared an abstract taken from the London *Practitioner* of an article by Sir James Dundas-Grant, dealing with the relief of catarrhal deafness. Among the prescriptions given upon page 721 of the October number of the GAZETTE is one in which sweet oil of lavender is used as the vehicle. The London office of the THERAPEUTIC GAZETTE inquired of Sir James whether this was correct. His reply to this query is as follows:

"The error you note was simply a *lapsus calami*. I hope that the word 'dulc.' will lead any pharmacists who have to deal with it to realize that it was 'Ol. Amygdal. Dulc.' that was meant. What I meant in reality was, of course, 'Ol. Amygdal. Dulc.' up to 1 oz."

Institutionalization of the Practice of Medicine.

Mitchell in the *Illinois Medical Journal* for September, 1925, points out that in this machine-age not only the layman but, unfortunately, all too many physicians as well have been led into a blind faith in laboratory diagnostic tests. The tremendous value of physical examination and clinical judgment has been forgotten. Thousands of patients are daily being treated for syphilis who have never even been exposed to the infection merely because a laboratory has returned a report of a one-plus Wassermann test. Some physicians are allowing their clinical judgment and their powers of observation to atrophy from disuse, and are glorifying laboratory methods to a degree little short of the absurd. Not infrequently when all the results of the numerous and complicated tests carried out for a given patient are gathered together, the physician is not only not aided in arriving at a diagnosis but is led astray. He knows of a young woman who was subjected to all the laboratory tests available at that time because of a recurrent dermatitis on the upper lip. It remained, however, for another observer to arrive at a correct diagnosis in a few minutes by doing some straight thinking instead of complicated laboratory tests, and by charging the patient with the use of a depilatory, to which she confessed, much to the amazement of her overfond mother.

An extraordinary situation exists to-day in America, and one which could exist in no country other than this land of contradictions and extremes. We have on the one hand a large body of the population with implicit faith in machine-medicine and efficiency experts, and on the other an equally large number of Christian Scientists who can dispose of a "claim" or "demonstrate" an increase in salary merely by denying the former or thinking hard about the latter. No laboratory apparatus, no guinea-pigs, no test-tubes, no laying on of hands—not even is it necessary to visit the patient. The treatment can be carried on while the practitioner sits at home toasting his shins by the fire.

In no department of medicine is the institution assuming more importance than in the field of venereal disease. The Federal government, the State, the county, the city and privately organized clinics are all actively engaged either in the diagnosis or treatment, or both, of venereal disease. The late war with its wide-spread dissemination of antivenereal propaganda and the army methods of prophylaxis and treatment have been largely responsible for this development.